X. *Monograph of the Genus* Xylocopa, *Latr.* By Frederick Smith, Assistant in the Zoological Department of the British Museum.

[Read 5th January, 1874.]

There is no genus of bees, in the family *Apidæ*, that is in my opinion more difficult of elucidation than *Xylocopa;* the sexes of many species can only be correctly assimilated when direct observation of their habits furnishes the evidence necessary to warrant their union. The males of numerous species are of a buff or fulvous colour, whilst the females are totally black; the sexes are usually about the same size, but the males of some species have very large approximating eyes, as in the case of the drones of the hive bee, whilst others are quite lateral, agreeing with those of the majority of the insect tribe. Several other peculiarities distinguish certain species of this genus, such as the dilatation of the apex of the first joint of the antennæ; and, in other instances, the intermediate legs are elongated, agreeing in this respect with several species belonging to the extensive genus *Anthophora*. The females may be divided into two sections; the first includes the majority of the species, and is distinguished by having the metathorax more or less rounded posteriorly; the second section have the same division of the thorax abruptly truncate, the hinder margin of the scutellum having a sharp edge, and being more or less submarginate.

Lepeletier de St. Fargeau has divided the genus into sections: the first contains those species, the labrum of which has three longitudinal elevated lines; this is true of his first species, but in the third the three elevations are rather tubercles than longitudinal elevations. The second section is said to be without elevated lines, and to be distinguished by having only a tubercle at the middle of the base of the labrum; this does not hold good as regards many of the species placed in the section. I have dissected several, and find in each three tubercles; these are not readily distinguished unless the labrum is detached from the clypeus. *Xylocopa flavo-rufa*, and also *X. æstuans*, have each three tubercles, and this I believe will

be found to be the case in the majority of the other species.

A very distinct section might be formed of those species, in which the eyes of the males are greatly enlarged, occupying the greater part of the head, and meeting or closely approximating at the vertex; but the present state of our knowledge of the genus scarcely warrants its formation, the males of numerous species being still unknown. The colouring of the wings I have found a very useful character; this however requires one or two considerations. Specimens quite recently taken have a brilliancy which is never retained in old cabinet specimens, or even in such as had been long disclosed at the time of their capture. On receiving a series of females of *Xylocopa latipes*, captured near Calcutta, by Mr. G. A. James Rothney, their brilliancy at first induced me to think I had a new species before me; these circumstances should be always considered, and when this is done the colour of the wings will be found a very useful auxiliary in the determination of species.*

I have had the advantage of examining several type-specimens of the species described by St. Fargeau, but I must confess to have experienced great difficulty, in many instances, in my endeavours to master his work on this genus.

In eleven instances St. Fargeau omits to give the size of the species, and in others the size of one or other of the sexes is not given, and the localities are not always indicated; these circumstances combined, to say little of the descriptions themselves, which are very deficient in discriminative character, have rendered my labour somewhat perplexing. My own descriptions will probably be considered, in some instances, to be merely diagnostic. I have endeavoured to give in all cases just sufficient to enable the student to make out his species; it is certainly a mere useless incumbrance to describe over and over again characters common to every species of the genus. This paper must be considered as an endeavour to supply material for a much more complete monograph to be compiled by some

* The form and sculpture of the clypeus have been noticed as presenting good specific characters, but the examination of a good series of a species, which is distinguished by having lateral tubercles on that part of the face, has proved that such characters are extremely variable, so much so as to be obsolete in some examples; the puncturing of the clypeus is frequently a very useful character.

future Hymenopterist. I have felt it incumbent on myself to place in the hands of entomologists all the materials which in the course of years I have been able to accumulate. I have neglected no opportunity of endeavouring to induce collectors in foreign countries to make careful observations of the economies of these insects, and I may mention Herr Gueinzius, as one who paid much attention to the habits of *Hymenoptera*, and who on many occasions has furnished highly interesting information on the insects found in the district of Port Natal. In the British Museum are many nests, with the insects bred from them; some of the results of such observations will be found to be acknowledged in this paper. To Mr. H. W. Bates also I have been frequently indebted for valuable information of the habits of the *Hymenoptera;* and in one or two instances the propriety of uniting the sexes of species of *Xylocopa* found in Brazil have been confirmed by his observations. I have divided the genus into geographical sections, and these I have again subdivided, each into three divisions; the first contains those species of which the two sexes are similarly coloured; the second, species of which the sexes are differently coloured; my third division consists of species of which only one sex is known. This arrangement will I trust greatly simplify the study of this extensive genus, no less than one hundred and twenty-three being recorded in this paper. I have thus amassed materials which other hands may hereafter arrange, probably in a more orderly and scientific manner.

One or two of my sections have been named generically. I, however, only consider them of divisional value.

In the genus *Xylocopa*, as in that of *Megachile*, the males of some species have the anterior tarsi dilated; other species of *Xylocopa* have the intermediate legs greatly elongated; a similar section is found in the genus *Anthophora*. Lepeletier de St. Fargeau has proposed the generic name *Audinetia* for the division to which *X. latipes* belongs, the males having the eyes very large, and approximating on the vertex; the anterior tarsi are dilated and thickly fringed behind; the females have the metathorax abruptly truncate, the posterior margin of the scutellum being somewhat elevated and sharply edged. In this section he places his species *X. crassa*, which is the female of *X. torrida*, the male of which has the anterior tarsi simple. Another sub-genus of St. Fargeau, *Schönherria*, is characterized by the females having the

scutellum inclined and not elevated at its posterior margin; the abdomen oblong and depressed; the males are said to have the anterior tarsi slightly dilated; the first of these characters are common to many females not included in the section, and that applied to the males I have been unable to detect.

The genus most closely allied to *Xylocopa* is that of *Lestis*, consisting at present of two Australian species; in this genus both the labial and maxillary palpi are four-jointed.

Genus Xylocopa (Latr.)

Head transverse, subrotundate; ocelli placed in a triangle on the vertex. Eyes lateral, elongate-ovate, varying in size in the females; in the males varying greatly, in some species occupying the greater part of the head, and closely approximating at their summit. Mandibles short, stout, and usually with three blunt teeth at their apex. Maxillary palpi 6-jointed; the three basal joints much longer and thicker than the three apical ones, each in succession decreasing in length. Labial palpi 4-jointed; the basal joint elongate, being five times the length of the second; the two apical joints minute, and inserted in a line with the other joints. Anterior wings with one elongate marginal cell, acute at its apex; three submarginal cells, the third as long as the first and second united; the second of an irregular subtriangular shape; the first recurrent nervure uniting with the second transverso-medial nervure; the second entering the third submarginal cell towards its apex. The anterior and intermediate tibiæ with a single spine at their apex; that on former flattened and obliquely truncate at the apex; the posterior tibiæ have two simple spines at their apex; the claws of the tarsi bifid. The legs of the males sometimes elongated; the intermediate legs, in one or two species, greatly so.

Species of Europe.

Div. 1.—Males and females similarly coloured. Species 1 to 5.
Div. 2.—Males of a different colour to the females. None.
Div. 3.—Only one sex of the species known. Species 6 to 7.

Species of Africa.

Div. 1.—Males and females similarly coloured. Species 8 to 13.
Div. 2.—Males of a different colour to the females. Species 14 to 21.
Div. 3.—Only one sex of the species known. Species 22 to 40.

Species of Asia, the Islands of the Malay Archipelago, and of Australia.

Div. 1.—Males and females similarly coloured. Species 41 to 53.
Div. 2.—Males of a different colour to the females. Species 54 to 59.
Div. 3.—Only one sex of the species known. Species 60 to 77.

Species of South America, Brazil, and the West India Islands.

Div. 1.—Males and females similarly coloured. Species 78 to 80.
Div. 2.—Males of a different colour to the females. Species 81 to 83.
Div. 3.—Only one sex of the species known. Species 84 to 111.

Species of North America.

Div. 1.—Males and females similarly coloured. Species 112 to 116.
Div. 2.—Males of a different colour to the females. Species 117, 118.
Div. 3.—Only one sex of the species known. Species 119 to 123.

Geographical Distribution of the Species.

Europe, 7.
Africa, 33.
India, China and Malay Archipelago, 35.
Australia, 2.
South America and West Indies, 34.
North America, 12.

Species of Europe.

1. *Xylocopa violacea.*

Apis violacea, Syst. Nat. i. 959, ed. xii., ♀; Scop. Ent. Carn. 305, fig. 812, ♀; Fabr. Syst. Ent. 379; Ent. Syst. ii. 315; Schrank. Ins. Austr. 394; Rossi, Faun. Etrus. ii. 99; Panz. Faun. Germ. 59, 6, ♀.

Xylocopa violacea, Latr. Gen. Crust. et Ins. iv. 159, ♂, ♀; Fabr. Syst. Piez. 338; Westw. Nat. Libr. (Jardine) Entom. vi. 265, pl. 20, fig. 3, ♀; St. Farg. Hym. ii. 183; Lucas, Explo. Sc. Algér. iii. 166; Eversm. Bull. Mosc. xxv. 125; Smith, Cat. Hym. Ins., Apidæ, ii. 344; Gerst. Stett. Ent. Zeit. (1872), p. 275.

Xylocopa femorata, Fabr. Syst. Piez. 339, ♂. Reaum. Ins. vi. pl. v. fig. 1, 2.

This well known European species is entirely black, its pubescence black; its wings brown-black, with a brilliant violet iridescence. Length 10 to 12 lines.

Hab.—France; Germany; Dalmatia; Austria; Sicily; Italy; Russia; Sweden; Algeria; Syria.

2. *Xylocopa cyanescens.*

Xylocopa cyanescens, Brullé, Expéd. Scient. de Morée, Zool. iii. p. 339, pl. 48, fig. 8; Lucas, Explo. Sc. Algér. iii. 166; Smith, Cat. Hym. Ins., Apidæ, ii. 344; Gerst. Stett. Ent. Zeit. (1872), p. 279.

Xylocopa minuta, St. Farg. Hym. ii. 190, ♂, ♀.

Xylocopa taurica, Erichs. in Reis. in der Regentsch. Algier, von M. Wagner, iii. 192, ♂, ♀.

Blue, with occasionally violet tints on the abdomen; the head black, or blue-black; wings dark fuscous, with a violet iridescence; the male resembles the female in colour. The sexes are from five to six lines long.

Hab.—France; Switzerland; The Morea; Sicily; Syria; Algeria.

3. *Xylocopa Olivieri.*

Xylocopa Olivieri, St. Farg. Hym. ii. 192, ♂; Gerst. Stett. Ent. Zeit. (1872), p. 281.

Xylocopa hellenica, Spin. Ann. Soc. Ent. France, i. 2nd ser. (1843), p. 144.

Xylocopa fuscata, Smith, Cat. Hym. Ins., Apidæ, p. 345, ♀.

Xylocopa fasciata, Eversm. Bull. Soc. Nat. Mosc. (1854), ii. p. 198.

Female.—Rufo-fuscous, sometimes nigro-fuscous; the pubescence fulvous. Head much narrower than the thorax; antennæ ferruginous, usually more or less fuscous above; thorax densely pubescent above; wings slightly flavo-hyaline, the nervures and tegulæ rufo-testaceous; abdomen, the apical margins of the segments with narrow fasciæ of pale fulvous pubescence; that at the apex bright fulvous. The male resembles the female, but has the labrum and clypeus white. Length 10 lines.

Hab.—South-east of Europe; Greece; Turkey; Bagdad; Russia; Syria.

St. Fargeau in his description of the male does not notice the white clypeus and labrum; this renders it doubtful whether it really belongs to this species. Dr. Gerstäcker quotes, with a query, the probability of my *X. lanata*, from Turkey, belonging to this species. I observe the fol-

lowing differences in the only example I have seen: the head is shorter and rounder, the pubescence on the head and thorax white, a little tinged with fulvous on the disk of the thorax; the two apical segments of the abdomen are densely covered with bright fulvous pubescence; it is altogether a shorter and more compact insect. The specimen is in the finest condition.

4. *Xylocopa Cantabrica.*

Xylocopa cantabrita, St. Farg. Hym. ii. p. 193, ♂, ♀.
Xylocopa sinuatifrons, Spin. Ann. Soc. Ent. France (1843), 2nd ser. i. 143, ♀.
Xylocopa Cantabrica, Gerst. Stett. Ent. Zeit. (1872), p. 280, ♂, ♀.

Female.—Black and shining; head not quite so wide as the thorax, closely punctured; the thorax more distantly so, the disk smooth; the pubescence on the head and thorax griseous; on the tibiæ, tarsi and apex of the abdomen the pubescence is fulvous; wings flavo-hyaline, with a fuscous cloud at their apical margins. The male resembles the female, but is more pubescent. Length 8 lines.

Hab.—North of Spain.

5. *Xylocopa valga.*

Xylocopa valga, Gerst. Stett. Ent. Zeit. (1872), p. 276, ♀, ♂.

Closely resembles *X. violacea*, being black and having dark-violet wings; the female is distinguished from that species by having the third joint of the antennæ shorter, a little stouter, and only equal in length to the two following joints united; *X. violacea* ♀ has the third joint as long as the three following united; the head is proportionably narrower than in *X. violacea*, and less swollen behind the eyes. The male I have not seen, but it is at once known from that of *X. violacea* by its unicolorous antennæ, the two penultimate joints being reddish-yellow in *X. violacea;* the latter species has the posterior coxæ mucronate at the apex, the tibiæ arcuate and appendiculate at the apex; in *X. valga* the apex is simple. Dr. Gerstäcker has pointed out all the distinctive characters of the sexes.

Hab.—Bozen (Switzerland?); Crimea; Trieste; Syria (Mount Hermon).

6. *Xylocopa lanata.*

Xylocopa lanata, Smith, Cat. Hym. Ins., Apidæ, ii. 345, ♂.

The male only known; the thorax black, abdomen nigro-piceous, the legs ferruginous, as well as the antennæ; the clypeus white; the head and thorax densely clothed with a whitish woolly pubescence; on the thorax above faintly tinged with fulvous; that on the legs and apex of the abdomen is bright fulvous; the base of the abdomen, and the apical margins of the segments, fringed with pale pubescence; wings hyaline, with a faint yellow tint, the nervures ferruginous. Length 6 lines.

Hab.—Turkey in Europe.

Species of Africa.

7. *Xylocopa capensis.*

Xylocopa capensis, St. Farg. Hym. ii. 179, ♂, ♀; Smith, Cat. Hym. Ins., Apidæ, ii. 348, ♂.

Xylocopa capitata, Smith, Cat. Hym. Ins., Apidæ, ii. 348, ♀.

The female is entirely black, the head very large, nearly as wide as the thorax, closely and finely punctured; the thorax and abdomen smooth, shining, and with distant delicate punctures; wings brown-black, with bright violet iridescence; the basal joint of the anterior tarsi more or less clothed with fulvous pubescence beneath.

The male has the face, as high as the insertion of the antennæ, yellow; the abdomen with a tuft of white pubescence at the sides of the base; the posterior coxæ and femora much dilated, the latter having the posterior margin compressed and tuberculate in the middle, the first joint of the posterior tarsi swollen at the base; wings dark brown-black, with a violet iridescence. Length of the female 12—14 lines; of the male 13½ lines.

Hab.—Cape of Good Hope.

8. *Xylocopa flavo-rufa.*

Xylocopa flavo-rufa, De Geer, Mem. vii. 605, pl. 45, f. 1, ♀; Oliv. Encycl. Méth. iv. 63; St. Farg. Hym. ii. 177, ♂, ♀; Smith, Cat. Hym. Ins., Apidæ, ii. 350; Gerst. Peter's Reise Mossamb. 444.

Xylocopa trepida, Fabr. Syst. Piez. 340.

A large species readily distinguished; both sexes are black, with the thorax above, and the tip of the abdomen, fulvo-rufous; the wings dark-brown, and with a green and violet iridescence. Length eleven to thirteen lines.

Hab.—Guinea; Cape of Good Hope; Knysna; Natal; Angola.

9. *Xylocopa combusta.*

Xylocopa combusta, Smith, Cat. Hym. Ins., Apidæ, ii. 350, ♂, ♀.

A common large black species, the female readily known by having a little bright ferruginous pubescence at the extreme apex of the abdomen. The male has the clypeus, two minute spots on the labrum, and the scape of the antennæ in front, yellowish-white; the flagellum fulvous beyond the basal joint; the anterior legs with the lower margin more or less ferruginous, also the tibiæ beneath; the anterior coxæ with a tuft of ferruginous pubescence between them; the anterior and intermediate tarsi fringed with fulvo-ferruginous pubescence, the basal joint of the intermediate pair fringed with black behind at their base; the apical joints of all the tarsi rufo-testaceous; the wings in both sexes blackish-brown, with green and purple iridescence. Length one inch.

Hab.—Congo; Sierra Leone; Angola; Fernando Po.

10. *Xylocopa modesta.*

Xylocopa modesta, Smith, Cat. Hym. Ins., Apidæ, ii. 352, ♀.

This small species has the thorax and basal segment of the abdomen clothed with yellow pubescence; the extreme tip of the abdomen has a little ferruginous pubescence; the wings dark fuscous beyond the second submarginal cell, the basal portion being subhyaline; the wings have a purple iridescence. Length of the female six and a half lines.

The male resembles the female, but has the face clothed with cinereous pubescence, and the legs are rufo-piceous beneath.

Hab.—The Gambia.

*11. *Xylocopa oblonga.*

Female.—Black, oblong, thorax and abdomen shining; the head semi-opaque and closely punctured; the carina in front of the ocelli forming a slight tubercle between the antennæ; the flagellum of the latter testaceous beneath, excepting the two basal joints. Thorax finely punctured above; the disk of the mesothorax impunctate; the pubescence on the sides and legs black; that on the anterior tarsi obscure ferruginous beneath; wings brown-black, with a rich purple iridescence, tinted with green at the apical portion of the anterior pair; metathorax rounded. Abdomen finely and distantly punctured, the sides fringed with long black pubescence. Length fifteen lines; expanse of the wings two inches and a half.

Male.—Of the same oblong form as the female; the clypeus, except its anterior margin, the sides of the face as high as the anterior ocellus, and a ring which surrounds them, white; antennæ black. Thorax: a little griseous pubescence in front, a little beneath the wings, and a tuft at the base of the posterior coxæ; the posterior femora incrassate, their hinder margin thin and sinuated, with a minute tubercle at the base; the legs elongated. Length twelve and a half lines; expanse of the wings two inches and a quarter.

Hab.—Cape of Good Hope.

12. *Xylocopa rufitarsis.*

Xylocopa rufitarsis, St. Farg. Hym. ii. 191, ♂; Smith, Cat. Hym. Ins., Apidæ, ii. 346.

This small species is readily distinguished as regards the male sex, which is black; the vertex has a little griseous pubescence; the thorax is clothed above with similar pubescence; the abdomen has a little on the basal margin of the abdomen, and the three following segments have a little on the apical margins laterally; its length is seven lines; the wings are fusco-hyaline. The female is totally black, evenly and rather finely punctured; wings as in the male; length seven to eight lines.

Hab.—Cape of Good Hope.

13. *Xylocopa hottentotta.*

Xylocopa hottentotta, Smith, Cat. Hym. Ins., Apidæ, ii. 349, ♀.

Female.—Length 8—9½ lines. Black, the wings brown-

black, with a bright steely-blue iridescence. The head closely punctured; the flagellum of the antennæ nigro-piceous beneath; more or less so in different examples. Thorax shining above; punctured; the disk smooth, nearly impunctate, having only a few fine scattered punctures; the metathorax rounded. Abdomen of the same width as the thorax, not very closely punctured, most sparingly so down the middle.

Male.—Length 8—9½ lines. Very closely resembling the female, but with the antennæ usually entirely nigro-piceous beneath, in some of the larger examples very obscurely so; varying greatly in this respect. The clypeus with silvery-white pubescence, and the anterior margin of the thorax with similar pubescence, more or less bright; in different examples there is sometimes a little white pubescence on each side of the basal margin of the abdomen; the sixth and seventh segments are fringed with black pubescence on the apical segment, forming lateral tufts. In some examples there is a little whitish pubescence on the sides of the thorax beneath the wings.

This species is about the same size and is most closely allied to *X. rufitarsis*, but the male is at once distinguished by the colour of the hair that clothes the tarsi; the female of *rufitarsis* has paler wings, and they have a violet iridescence.

A series of ten females, together with twelve females, obligingly sent by Sir Sidney Smith Saunders, have enabled me to indicate the range of variation in this species; they are from Aden.

Hab.—Sierra Leone; Angola; Natal; Aden.

——14. *Xylocopa lateritia.*

Xylocopa lateritia, Smith, Cat. Hym. Ins., Apidæ, ii. 346, ♀; Gerst. Reis. Mossamb. (Peter's), 444, Taf. xxix., fig. 1 ♂, 2 ♀; and Reis. in Ost-Afrika, Von der Dek. 315.

Female.—Black, with the thorax and basal segment of the abdomen clothed with short brick-red pubescence; a tubercle in front of the anterior ocellus; the flagellum of the antennæ pale beneath; wings dark-brown and with a violet iridescence.

Male.—The head, thorax above and at the sides, the

anterior tibiæ, and base of the abdomen, densely clothed with fulvous pubescence; the rest of the abdomen with a greenish-yellow pubescence, its apical margin with a fringe of black pubescence.

Hab.—Isle of Johanna, Mozambique.

15. *Xylocopa africana.*

Apis africana, Fabr. Ent. Syst. ii. 319, ♂.
Bombus africanus, Fabr. Syst. Piez. 346.
Xylocopa africana, St. Farg. Hym. ii. 198; Smith, Cat. Hym. Ins., Apidæ, ii. 346, ♂.
Xylocopa varipes, Smith, Cat. Hym. Ins., Apidæ, ii. 351, ♀.

The sexes were sent to the Museum as constituting one species from Fernando Po; the female has the pubescence on the head, thorax, basal segment of the abdomen, the fringe of the apical segment, the anterior and intermediate legs, and the posterior tibiæ, clothed with ochraceous pubescence; that on the thorax, in very fine examples, is somewhat fulvous; wings dark-brown and with a purple iridescence. The male has the pubescence on the vertex black, intermixed with luteous, that on the clypeus and cheeks whitish; the pubescence on the thorax in front, and on the legs, black; on the basal segment of the abdomen, and on the thorax posteriorly, it is bright yellow, the yellow portion being of an angular shape in front of the insertion of the wings; the wings subhyaline, their margins broadly adorned with coppery iridescence. The abdomen with olive pubescence.

Length of the female 9—10 lines; of the male 7—9 lines.

Hab.—W. Africa; Fernando Po; Angola.

16. *Xylocopa caffra.*

Apis caffra, Linn. Syst. Nat. i. 959, ♀; Fabr. Ent. Syst. ii. 319, ♀.
Bombus caffrus, Fabr. Syst. Piez. 346.
Xylocopa caffra, St. Farg. Hym. ii. 197, ♂, ♀; Klug, Illig. Mag. vi. 209; Smith, Cat. Hym. Ins., Apidæ, ii. 346; Gerst. Insekt. Reise Mossamb. p. 444; Gerst. Von der Deck. Reise in Ost-Africka, iii. pl. 2, Wissensch. Theil. 315.

The female is black, with the posterior portion of the thorax and the basal portion of the abdomen yellow; the wings brownish-black with a purple iridescence. The pubescence of the male is olive-yellow; the antennæ yellow beneath, except one or two joints at the base of the flagellum; the mandibles have a minute yellow spot at their base and the anterior margin of the clypeus has a narrow yellow line, this is sometimes interrupted; the legs are pubescent, that on the underside being black; at the tip of the abdomen the pubescence is slightly fulvous, with more or less of black hairs at the sides. Length of female 10 lines; of the male 9 lines.

Hab.—Cape of Good Hope; Damara-Land; Congo.

17. *Xylocopa olivacea.*

Apis olivacea, Fabr. Ent. Syst. ii. 319, ♂.
Bombus olivaceus, Fabr. Syst. Piez. 347.
Xylocopa olivacea, Smith, Cat. Hym. Ins., Apidæ, ii. 349, ♂, ♀.
Xylocopa luteola, St. Farg. Hym. ii. 198, ♂.

The male resembles that of *X. caffra*, but is not so bright in colour, being olive, the antennæ pale beneath, with a longitudinal pale line on the clypeus, the anterior margin of the same and two spots on the labrum reddish-yellow; there is also a minute yellow spot at the base of the mandibles; the claw-joint of the tarsi ferruginous, and the pubescence on the intermediate and posterior tarsi black; the wings subhyaline, with a fuscous stain in the marginal cell, and a faint cloud at the apical margins; length seven lines. The female is black, with the thorax and basal segment of the abdomen clothed with bright yellow pubescence; the basal half of the wings subhyaline, the apical pair dark fuscous; the flagellum of the antennæ pale beneath; length eight lines.

Hab.—Sierra Leone; Angola.

18. *Xylocopa divisa.*

Xylocopa divisa, Klug, Mag. der Gesell. Nat. für zu Berlin, ♀; Smith, Cat. Hym. Ins., Apidæ, ii. 363.

The sexes of this small species were bred from the nest by Herr Gueinzius, at Natal; it is readily distinguished: the female is black, with the posterior half of the thorax

clothed with yellow pubescence; the wings are brown, palest at the base, and have a bright purple iridescence. The male resembles that of *X. africana*, but the thorax is uniformly bright yellow above and not bordered in front with black pubescence; it is, however, both on the sides and beneath, of a darker hue; its anterior and intermediate tarsi are fringed behind with long, fulvous pubescence, and the abdomen is uniformly yellowish, being darkest on the sides and down the centre.

Hab.—Natal; Abyssinia.

The female varies in having, in good examples, a little yellow pubescence at the base of the abdomen; it has also, in some instances, a griseous pubescence on the face.

— 19. *Xylocopa torrida.*

Mesotrichia torrida, Westw. Trans. Ent. Soc. Lond. ii. 113, ♂, pl. xi. f. 7, ♂ (1838).

Xylocopa crassa, St. Farg. Hym. ii. 204, ♀ (1841).

Xylocopa torrida, Smith, Cat. Hym. Ins., Apidæ, ii. 349, ♂.

There is little or no doubt of the sexes being correctly united; in 1851 four males and three females were received from Fernando Po, no other *Xylocopa* accompanying them; since that time they have been received in collections from other localities; Dr. Welwitsch took the sexes plentifully in Angola. The male is black, with the head, the anterior half of the thorax, and the four anterior legs, clothed with bright rufo-fulvous pubescence; the intermediate legs elongated, the femora with a long tooth at their base beneath, the first joint of the tarsi being fringed with long pale hair on both sides, the claw-joint is also fringed; the clypeus and scape of the antennæ in front is yellowish-white, the flagellum being fulvous beneath. Length twelve to thirteen lines.

The female is totally black; the head is large, nearly as wide as the thorax in front; the face densely clothed with black pubescence; the head is closely punctured and opaque; thorax and abdomen broad, shining, and finely punctured, the disk of the thorax impunctate; abdomen rather flattened above and fringed at the sides with black pubescence; wings black-brown, with a violet and green iridescence; the basal joint of the anterior tarsus is covered beneath with ferruginous pubescence. Length one inch.

Hab.—Fernando Po; Angola.

20. *Xylocopa nigrita.*

Apis nigrita, Fabr. Ent. Syst. ii. 316, ♀.
Xylocopa nigrita, Fabr. Syst. Piez. 340; St. Farg. Hym. ii. 179; Gerst. Von der Deck. Reis. in Ost-Afrika, iii. pt. 2, Wissensch. Theil. 314.

Female.—The pubescence on the face, anterior legs, and sides of the abdomen white; on the other parts of the insect it is black.

Male.—Fulvo-ochraceous, with fulvous pubescence; the coxæ, pectus, base of the anterior and intermediate femora, as well as the posterior pair, black. Length of each sex about fourteen lines.

The sexes were bred by Herr Gueinzius of Natal, who forwarded the nest to the British Museum.

Hab.—Sierra Leone; Natal; Angola.

21. *Xylocopa calens.*

Xylocopa calens, St. Farg. Hym. ii. 196, ♀.

The female is black, with the thorax above and the first segment of the abdomen bright citron-yellow. The male has the head, thorax, tibiæ and tarsi clothed with yellow pubescence, that on the latter is long and has a ferruginous tinge; the tarsi ferruginous, the antennæ rufo-piceous, the scape yellow beneath, the flagellum fulvous, the anterior margin of the clypeus, and sometimes a line down its centre, more or less distinct, and a minute spot at the base of the mandibles, yellow; wings dark brown, with a violet iridescence. Abdomen: at the base the pubescence is yellow, beyond inclining to olive, and at the apex it is black; the apex of the posterior tibiæ and first joint of the tarsi with black pubescence; the wings slightly fuscous, and with a violet iridescence; the nervures ferruginous. Length of the female nine lines; of the male eight.

Hab.—Madagascar.

*22. *Xylocopa cupripennis.*

Male.—Length 8 lines. Black; head much narrower than the thorax; the pubescence on the head, thorax, and base of the abdomen at the sides, griseous; the head and thorax closely punctured and shining; the abdomen with a blue tinge, particularly so at the base; the apical margins of the segments narrowly rufo-piceous; wings sub-

fuscous and with coppery iridescence, which in certain lights has purple tints.

Hab.—Algeria.

23. *Xylocopa femorata.*

Xylocopa grisescens, Smith, Cat. Hym. Ins., Apidæ, ii. 347, ♂ (nec St. Farg. Hym. ii. 178).

I had overlooked the species described by St. Fargeau when I gave the name *grisescens* to this insect; it is black and covered with griseous pubescence, that on the tarsi being pale fulvous; the posterior femora are much dilated; the wings fusco-hyaline, with a darker cloud beyond the inclosed cells; it is nine lines long. This is very probably the male of *X. cirtana*.

Hab.—Algeria.

24. *Xylocopa præusta.*

Xylocopa præusta, Smith, Cat. Hym. Ins., Apidæ, pt. ii. 347, ♂.

This species was marked female in my catalogue by an oversight; it is distinguished by having the head, thorax, legs and base of the abdomen densely clothed with short ochraceous pubescence, which has a golden lustre; the intermediate and posterior tarsi, as well as the apex of the abdomen, are clothed with bright fulvous; the scape in front and the clypeus yellow. Length ten lines.

Hab.—Africa.

25. *Xylocopa obscurata.*

Xylocopa obscurata, Smith, Cat. Hym. Ins., Apidæ, ii. 347, ♂.

This male is very distinct from all others which are known to me; it is nine lines long; its head and thorax are densely clothed with short fulvo-ferruginous pubescence, not bright, rather obscure; the same also covers the basal segment of the abdomen; on the other segments it is black, except that on the two apical ones, which is bright fulvous; the wings fuscous, with a slight purple iridescence.

Hab.—Africa.

26. *Xylocopa ustulata.*

Xylocopa ustulata, Smith, Cat. Hym. Ins., Apidæ, ii. 351, ♂.

This small species is black, with the mandibles and antennæ ferruginous, the latter more or less fuscous above. The anterior legs ferruginous beneath; the intermediate and posterior femora and tibiæ more or less so at their apex. The face, thorax anteriorly, and basal margin of the abdomen, with griseous pubescence; there is also, usually, a little on the sides of the thorax beneath; the wings dark brown, with a violet iridescence; the disk of the thorax shining, smooth, and having a few distant punctures; abdomen shining, sparingly punctured in the middle, more closely so at the sides; the apex fringed with black pubescence. Length 7½ lines.

Hab.—The Gambia.

27. *Xylocopa producta.*

Male.—Length 9½ lines. Black, with black pubescence; that on the front of the thorax above, and that on each side of the basal segment of the abdomen above, griseous; the clypeus and face, as high as the insertion of the antennæ, yellowish-white; the underside of the flagellum fulvous. Thorax and abdomen rather closely punctured, the disk of the former impunctate; the posterior femora incrassate, and with a subtriangular flattened projecting process behind; wings brown, not very dark, palest towards the base, and with a purple iridescence.

Hab.—Angola.

This is probably the male of *X. carinata.*

*28. *Xylocopa flavilabris.*

Male.—Length 8 lines. Black, with black pubescence, that on the thorax above, and on the first segment of the abdomen, bright rufo-fulvous; on the apex of the posterior tibiæ and on the tarsi it is bright ferruginous; the clypeus and face, as high as the insertion of the antennæ, yellow; wings dark brown, with a purple iridescence; the posterior femora incrassate, and having beneath a sharp angular tubercle.

Hab.—Cape of Good Hope.

29. *Xylocopa albifrons.*

Xylocopa albifrons, St. Farg. Hym. ii. 191, ♂.

A male; black, with the clypeus, the inner orbits of the eyes, and a spot beneath the antennæ, white; the pubescence on the thorax and the first segment of the abdomen obscure reddish-brown; the four posterior tarsi have rufous pubescence; wings fuscous, with a violet iridescence.

Hab.—Cape of Good Hope.

A species I have not seen, and one of those of which St. Fargeau has not given the size.

30. *Xylocopa angolensis.*

Female.—Black; head closely punctured, a minute tubercle between the antennæ; the disk of the thorax shining, less closely punctured than the head, and with a small impunctate space in the middle; wings subhyaline, clouded towards their apical margins; the anterior legs with black pubescence, the intermediate and posterior tibiæ and tarsi with bright fulvous pubescence; the apical joints of all the tarsi rufo-piceous. Abdomen shining, fringed at the sides with cinereous pubescence, the apical segment with black, and with a few ferruginous hairs at the extreme apex.

Hab.—Angola.

31. *Xylocopa inconstans.*

Female.—Length 12 lines. Black; the vertex and cheeks shining and with distant fine punctures; the face and clypeus strongly punctured. Thorax: the mesothorax smooth and shining on the disk, the lateral margins closely punctured; a band of white pubescence behind the insertion of the wings, crossing the scutellum, also a line beneath the wings; the first segment of the abdomen with white pubescence; wings very dark brown with a green and purple iridescence. Abdomen finely and distantly punctured. Length a little over an inch.

This species varies both in size and colouring. I have seen specimens from South Africa, sent by Dr. Livingstone, only ten lines long; the snow-white bands on the thorax and abdomen are sometimes bright yellow; the head is very large, as wide as the abdomen.

Hab.—South Africa, Lake Ngami.

32. *Xylocopa tarsata.*

Xylocopa tarsata, Smith, Cat. Hym. Ins., Apidæ, ii. 348 ♀.

Black; head closely punctured and with a short carina between the antennæ; the metathorax rounded behind; wings dark brown, with a purple and violet iridescence; the apex of the posterior tibiæ and the tarsi clothed with bright fulvous pubescence; abdomen fringed with black pubescence. Length 7 lines.

Hab.—Cape of Good Hope.

33. *Xylocopa carinata.*

Female.—Length 9 lines. Black; the head closely punctured and semi-opaque; an elevated shining carina runs from the anterior ocellus to the insertion of the antennæ, where it terminates in a slight tubercle. The thorax and abdomen shining and punctured, not very closely, and sparingly so on the disk of the former; the abdomen fringed with black pubescence at the sides; wings dark brown-black, with a bright purple iridescence intermixed with shades of green; the flagellum of the antennæ, except the two basal joints, ochraceous beneath.

This is the *X. frontalis* of Ferret and Galinier (Voy. en Abyssinie), but not of Olivier and Fabricius; I have therefore changed the name.

Hab.—Angola; Abyssinia.

34. *Xylocopa albiceps.*

Xylocopa albiceps, Fabr. Syst. Piez. 341, ♀; St. Farg. Hym. ii. 189; Smith, Cat. Hym. Ins., Apidæ, ii. 349.

This small species is readily distinguished; it has been hitherto described as having the antennæ entirely black, but the flagellum is pale beneath; the wings are very dark towards their apex, but are usually paler towards their base, and have a violet iridescence. Length 6 to 7 lines.

Hab.—Guinea; Sierra Leone; Congo.

35. *Xylocopa apicalis.*

Xylocopa apicalis, Smith, Cat. Hym. Ins., Apidæ, ii. 349, ♀.

This insect is coloured the same as *X. olivacea*, but it differs as follows: it is larger, the head proportionately

larger; the face densely covered with black pubescence, and the wings entirely dark brown, with a coppery and violet iridescence; its size is 10 lines.

Hab.—Sierra Leone; the Gambia.

36. *Xylocopa imitator.*

Xylocopa imitator, Smith, Cat. Hym. Ins., Apidæ, ii. 351, ♀.

This species is very like *X. albiceps*, but it is uniformly larger, its wings are entirely dark brown, with a rich purple iridescence, and at the extreme tip of the abdomen it has some bright ferruginous pubescence; its length is eight and a half to nine and a half lines.

Hab.—Sierra Leone; Congo; Gold Coast.

37. *Xylocopa lugubris.*

Xylocopa lugubris, Gerst. Peter's Reise Mossamb. 445; Taf. xxix. f. 4, ♀.

This is a small species, six lines long; it is black, with the thorax clothed above with griseous pubescence, as is also the abdomen laterally; the tarsi fuscous, the posterior pair white at the base; the wings fuscous, with a violet iridescence.

Hab.—Mozambique.

38. *Xylocopa cirtana.*

Xylocopa cirtana, Lucas, Explo. Sc. Algér. iii. 167, Atlas, pl. 4, fig. 10, ♀; Smith, Cat. Hym. Ins., Apidæ, ii. 347.

This species is clothed with a greenish-fulvous pubescence, the tibiæ and tarsi with fulvous-red pubescence; the wings slightly fuscous. One inch in length.

Hab.—Algeria.

39. *Xylocopa Amedæi.*

Xylocopa Amedæi, St. Farg. Hym. ii. 188, ♀; Lucas, Explo. Sc. Algér. iii. 167, pl. 4, fig. 9; Smith, Cat. Hym. Ins., Apidæ, ii. 348.

This species is black, with black pubescence; the tibiæ and first joint of the tarsi with ferruginous pubescence. Length twelve and a half lines.

Hab.—Algeria.

SPECIES OF ASIA, THE ISLANDS OF THE MALAY ARCHIPELAGO, AND OF AUSTRALIA.

40. *Xylocopa latipes.*

Apis latipes, Drury, Illus. Exot. Ins. ii. 98, pl. 48, fig. 2, ♂ ; Fabr. Ent. Syst. ii. 314.

Xylocopa latipes, Fabr. Syst. Piez. 337 ; St. Farg. Hym. ii. 203, ♂, ♀ ; Smith, Cat. Hym. Ins., Apidæ, ii. 353 ; Journ. Proc. Lin. Soc. ii. 47.

Platynopoda latipes, Westw. Nat. Libr. Entom. vi. 271, pl. 23, fig. 1, ♂.

Apis gigas, De Geer, Mém. iii. 576, pl. 28, fig. 15 ; Christ. Hym. tab. 4, fig. 1, 2 ♀, 3 ♂.

I think it very probable that the *X. marginella* of St. Fargeau is a variety of the female of *tenuiscapa*, having a little ferruginous pubescence at the base of the posterior tarsi. *X. latipes* and *X. tenuiscapa* are two of the largest species of the genus, and the sexes of each resemble each other ; they are black, and the males of each have their anterior tarsi dilated, yellow, flattened, and fringed with a mixture of long yellow and black pubescence ; the male of *X. latipes* sometimes has the clypeus and a spot at the base of the mandibles yellow ; other examples have the clypeus only partly yellow ; in others it is entirely black. Both species have the eyes of the males large and approximating ; *X. latipes* is known by its antennæ having the scape dilated at the apex into a battledore shape, its base being very much attenuated. The antenna of *X. tenuiscapa*, male, has not a dilated scape, it is simply slightly thickened from the base to the apex. The females are not so readily separated : both have the abdomen somewhat flattened and rather finely punctured, and fringed at the sides with curled, black pubescence ; the colour of the wings appears to be a good specific character. The wings of *X. tenuiscapa* are brown-black, with very vivid iridescence ; at their base they are purple, in the middle with bright tints of green and gold ; these occasionally extend to their base ; towards their apex is a mixture of purple and golden lustre. The wings of *X. latipes* are less vividly adorned ; they are equally dark, have a purple or violet iridescence, and are more or less tinged with green towards their apex. The third submarginal cell and third discoidal cell are longer in *X. latipes* than in *X. tenuiscapa*.

Hab.—India ; China ; Java ; Malacca ; Singapore ; Sumatra ; Borneo ; Philippines.

41. *Xylocopa tenuiscapa.*

Platynopoda tenuiscapa, Westw. Nat. Libr. (Jardine's) Entom. vi. 27, pl. 23, fig. 2, ♂.

Audinetia Latreillii, St. Farg. Hym. ii. 206, ♂, ♀.

Xylocopa tenuiscapa, Smith, Cat. Hym. Ins., Apidæ, ii. 353.

Xylocopa viridipennis, St. Farg. Hym. ii. 205, ♀, var.?

Hab.—India; Java; Ceylon; Penang; Philippines.

42. *Xylocopa albo-fasciata.*

Xylocopa albo-fasciata, Sichel, Reise der Novara, Hym. Foss. et Mellif. 154, ♀.

Hab.—Ceylon.

This is a large species, over one inch and a quarter in length; it is black and punctured; the antennæ fuscous beneath; the mandibles bidentate; the clypeus with a slight carina; the pubescence black on the head and thorax; the latter with strong, but distant punctures; the metathorax truncate. Abdomen strongly punctured, the base truncate; the marginal fimbria black; the basal margins of the segments with narrow white fasciæ of downy pile; the wings fusco-hyaline.

43. *Xylocopa dissimilis.*

Xylocopa dissimilis, St. Farg. Hym. ii. 180, ♂, ♀; Smith, Cat. Hym. Ins., Apidæ, ii. 356.

A large black species of an oblong, narrow form; the thorax rounded behind; head semi-opaque and closely punctured; thorax and abdomen shining; the disk of the metathorax impunctate; abdomen finely and distantly punctured; wings black-brown, with violet, purple, and, towards the apex, golden iridescence. The male is known by its having the clypeus and sides of the face yellowish-white, and by the anterior ocellus having a white lunule on each side; the posterior femora are very much enlarged, and have a blunt tooth or tubercle at their base; the coxæ are tuberculate at the apex; the thorax has a band of whitish pubescence in front and a patch of the same colour beneath the wings.

Hab.—India; Burmah; Philippine Islands; China.

44. *Xylocopa fenestrata.*

Apis fenestrata, Fabr. Ent. Syst. Supp. 273, ♂.
Xylocopa fenestrata, Fabr. Syst. Piez. 339; St. Farg. Hym. ii. 184, ♂ (nec ♀).
Xylocopa indica, Klug, Mag. der Gesell. Nat. für zu Berlin (1807), var.?

Male.—Black, punctured; the punctures fine and distant on the mesothorax, scutellum, and down the middle of the abdomen; the sides more strongly and closely punctured; the wings hyaline at their base; more or less so in different examples; beyond brown-black, with a violet iridescence. Female.—Shining black, finely and not very closely punctured; disk of the metathorax impunctate. The head as wide as the thorax; the face rather strongly and very closely punctured; the frontal tubercle prominent, and the lateral margins of the clypeus slightly elevated; the flagellum of the antennæ, except the three basal joints, testaceous beneath; the wings dark brown-black, with a bright violet iridescence towards their base, changing to an æneous tint at their apical margins. The lateral margins of the abdomen towards its apex fringed with black pubescence, the fringe at the apex is tipped with ferruginous. (See note below description of *X. indica*.)

Length of each sex ten lines.

I received the sexes of this species from Calcutta, where it was taken by Mr. G. A. James Rothney; the female described by St. Fargeau, has nothing to do with this species.

Hab.—India; Celebes.

*45. *Xylocopa cærulea.*

Bombus cæruleus, Fabr. Syst. Piez. 345, ♀.
Xylocopa cærulea, St. Farg. Hym. ii. 200; Smith, Cat. Hym. Ins., Apidæ, ii. 357.

Known immediately by the blue pubescence that clothes the head, thorax, and basal segment of the abdomen; a male from Java has the face covered with dirty-white pubescence, the rest of the head and thorax with blue; but this coloured pubescence does not extend to the abdomen, which has sooty-black pubescence at its base; on the rest of the abdomen and legs it is black. A small example from China, a female, has the eyes more approximating, and the wings are fusco-hyaline, darkest beyond

the middle ; it may prove to be a distinct species. Length nine to eleven lines ; of the specimen from China, six and a quarter. In this species the second submarginal cell is frequently wanting.

Hab.—New Caledonia ; China ; India ; Java ; Singapore ; Celebes ; New Guinea.

46. *Xylocopa collaris.*

Xylocopa collaris, St. Farg. Hym. ii. 189, ♀ ; Smith, Cat Hym. Ins., Apidæ, ii. 353 ; Journ. Linn. Soc. iv. 8.

Xylocopa Dejeanii, St. Farg. Hym. ii. 209, ♂ ; Smith, Cat. Hym. Ins., Apidæ, ii. 357 ; Journ. Linn. Soc. iv. 8.

The sexes were forwarded from Siam by M. Mouhot ; the female has the head, thorax in front and at the sides clothed with white pubescence ; the abdomen is black with a blue tinge, the wings fuscous, with a violet iridescence. The male has the face as high as the insertion of the antennæ, and the sides, a little above their insertion, white ; the pubescence on the cheeks, thorax above and at the sides, and also the two basal segments of the abdomen, the anterior legs, intermediate tarsi, and posterior tibiæ outside, clothed with griseous pubescence ; that on the disk of the thorax usually has a slight fulvous tint ; wings fusco-hyaline, with a coppery iridescence.

Hab.—Java ; India ; Sumatra ; Siam ; Borneo ; Celebes.

47. *Xylocopa auripennis.*

Xylocopa auripennis, St. Farg. Hym. ii. 181, ♂, ♀ ; Smith, Cat. Hym. Ins., Apidæ, ii. 356.

Both sexes are black, more oblong and narrow than the majority of the species ; the head closely punctured ; the disk of the mesothorax shining and impunctate ; abdomen shining, not very closely punctured ; the pubescence black. The male has the posterior femora incrassate and subdentate ; the wings are splendidly iridescent ; purple at the base ; the anterior wings have a golden lustre towards their apex, and tints of green adorn them in certain lights ; length of the species ten to twelve lines.

Hab.—Calcutta ; China.

*48. *Xylocopa rufescens.*

Female.—Rufo-fuscous; the head and thorax in some examples inclining to black or dark-brown; the abdomen varying in depth of colour; the pubescence rufo-fulvous; that on the legs and at the apex of the abdomen being bright rufo-fulvous; the antennæ ferruginous, sometimes more or less fuscous above; the wings fulvo-hyaline, palest at their posterior margins, the nervures rufo-testaceous, the tegulæ of a deeper tint of the same colour; some specimens have more or less of a narrow pale fulvous fringe on the apical margins of the segments of the abdomen, these are only observable in very fine specimens; the fourth, fifth and sixth segments have a marginal fringe of long rufo-fulvous pubescence. The male closely resembles the female, but the legs are more elongate, and the pubescence, in the only example I have seen, is of a paler colour, particularly that which clothes the thorax above. Length of both sexes 12½—13 lines.

Hab.—India; Java.

49. *Xylocopa basalis.*

Xylocopa basalis, Smith, Cat. Hym. Ins., Apidæ, ii. 355, ♂, ♀.

The sexes are similarly coloured; they are black, with dark-brown wings having a purple iridescence; the base of the wings, to about one-third of their length, clear hyaline. Length six and a half to eight lines.

Hab.—Northern India.

50. *Xylocopa perversa.*

Xylocopa perversa, Wied. Analec. Entom. ex Museo Hafniæ maxime congesta (1824), Bull. des Scienc. Nat. Géolo. tom. x. p. 421, ♂; Ritsema, Tijdschr. Entom. xvi. (1873), pl. 10, fig. 1 ♂, 2 ♀.

Xylocopa mesoxantha, St. Farg. Hym. ii. 199, ♀; nec ♂; Smith, Cat. Hym. Ins., Apidæ, ii. 357.

Female.—Black, with the two basal segments of the abdomen clothed with bright-yellow pubescence; wings fusco-hyaline, with a coppery iridescence. The male is black, with black pubescence; the thorax and abdomen with two longitudinal yellow pubescent lines, which ex-

tend to the apex of the abdomen. Length of the female six and a half lines; of the male six lines.

Hab.—Java.

51. *Xylocopa perforator.*

Xylocopa perforator, Smith, Journ. Proc. Linn. Soc. vi. 61, ♂, ♀.

Allied to *X. latipes* and *X. tenuiscapa*, most so to the latter species; the females present no striking specific difference; the species was established upon the differences observable in the males; the anterior tarsi are dilated as in *X. tenuiscapa*, but they are fringed with black pubescence, and the second, third and fourth joints of the tarsi are of equal length. I have only seen three males; they agree in these particulars, but may possibly prove to be a variety of *X. tenuiscapa*. Length of female fourteen lines; of the male twelve.

Hab.—Ternate.

52. *Xylocopa appendiculata.*

Xylocopa appendiculata, Smith, Trans. Ent. Soc. Lond. New Ser. ii. 41, ♀, ♂ (1852).

The female is black; the thorax above and at the sides with bright yellow pubescence; on the face and thorax beneath it is sooty-black; there is also a little yellow on the hinder margin of the vertex; the abdomen shining, and covered with shallow punctures; the sides and apex fringed with black pubescence. The male is similarly coloured; it differs in having the yellow pubescence continued on to the basal segment of the abdomen; the clypeus or spot at the base of the mandibles, the scape of the antennæ in front, and the flagellum beyond the second joint beneath, yellowish-white; the eyes are large and approximating; the anterior and intermediate tarsi with rufo-fulvous pubescence; the posterior tibiæ have at their apex a projecting somewhat quadrate appendage; the wings in both sexes are fuscous, not dark, and have a purple and coppery iridescence. Length nine to ten lines.

Hab.—Ning-po-foo (China).

This species closely resembles *X. circumvolans* of Japan, of which it may be a variety; it differs from it in having pale pubescence on its tarsi, and in not having any yellow pubescence on the abdomen.

53. *Xylocopa circumvolans.*

Xylocopa circumvolans, Smith, Trans. Ent. Soc. Lond. (1873), 205, ♂, ♀.

Female black; the pubescence black; that on the thorax above only being fulvous-yellow; wings dark brown, palest towards the base, and with a blue and violet iridescence in certain lights; abdomen shining and rather finely punctured; head more strongly punctured, closely so only on the face, which has a thin covering of sooty-black pubescence. The male is of the same colour as the female, but the wings are of a lighter colour; the clypeus, scape of the antennæ, and a minute spot at the base of the mandibles, yellowish-white. Length of the female ten and a half lines; that of the male the same.

Hab.—Hiogo (Japan).

54. *Xylocopa æstuans.*

Apis æstuans, Linn. Syst. Nat. i. 961, ♀; Fabr. Ent. Syst. ii. 323.

Apis leucothorax, De Geer, Mém. iii. 573, pl. 28, f. 7.

Bombus æstuans, Fabr. Syst. Piez. 351.

Xylocopa æstuans, St. Farg. Hym. ii. 193, ♂, ♀; Smith, Cat. Hym. Ins., Apidæ, ii. 353.

Xylocopa verticalis, Smith, Journ. Linn. Soc. ii. 48, ♂, nec St. Farg.

The female is black, the pubescence black, except that on the thorax above, which is yellow, and does not extend beneath the wings; the wings black-brown, with bright purple iridescence at the basal portion, beyond which it has a greenish tinge. The male is clothed with yellow pubescence; on the abdomen it has a greenish or olivaceous tinge; on the legs it is greenish-yellow, on the intermediate and posterior tarsi it is black, with a mixture of yellow outside; the abdomen has some black pubescence at the sides towards the apex; the wings fusco-hyaline, darkest in the marginal cell, with a purple iridescence in certain lights. Female, length eight to ten lines; of the male eight to nine lines.

Hab.—India; China; Borneo; Java; Bali Island; Sumatra; Celebes; Aru; Timor; Palestine; Aden.

55. *Xylocopa verticalis.*

Xylocopa verticalis, St. Farg. Hym. ii. 195, ♀, ♂

The female has much general resemblance to *X. æstuans*, but the yellow on the thorax extends down the sides, beneath the wings, and the posterior margin of the vertex is fringed with yellow hairs; there is also a little on the cheeks. The male I have not seen, but it is described as having the labrum, the margin of the clypeus, and a spot at the base of the clypeus, testaceous; the thorax and abdomen clothed with olive-yellow pubescence; beneath, mixed with black; the legs with reddish-yellow pubescence. Length of the female twelve lines; the male rather shorter.

Hab.—India.

56. *Xylocopa unicolor.*

Xylocopa unicolor, Smith, Journ. Proc. Linn. Soc. Zool. v. 135, ♂, ♀.

The female is totally black, except the underside of the antennæ beyond the third joint, which is pale fulvous; the metathorax is sharply truncate; the sides of the thorax, above, are densely clothed with short black pubescence, the disk smooth and shining; the wings dark brown, with a purple iridescence. The male is clothed with yellowish-olive pubescence, darkest on the abdomen, the sides towards the apex are fringed with black; the tibiæ and tarsi have a fulvous pubescence; the posterior tibiæ yellow outside; the antennæ in front, and the clypeus yellow, with two black spots at the base; wings fulvo-hyaline and iridescent. Length of the female nine lines; that of the male eight.

Hab.—Amboyna; Ceram; Bouru.

This species is remarkable in always, apparently, having the second submarginal cell obsolete; it has been received from three localities. I have examined two males and ten females.

57. *Xylocopa provida.*

Xylocopa provida, Smith, Journ. Proc. Linn. Soc. vii. 48, ♂, ♀.

The female is black, has griseous pubescence on the face, and the thorax is covered posteriorly with bright

yellow pubescence; the wings fusco-hyaline. Length eight and a half lines.

The male clothed with reddish-yellow pubescence; the anterior legs elongate, the tarsi with a long pale fringe behind; the posterior legs with black pubescence within; wings subhyaline, with a bright coppery iridescence. Length ten lines.

Hab.—Mysol; Waigiou; N. India.

58. *Xylocopa pictifrons.*

Xylocopa pictifrons, Smith, Trans. Ent. Soc. Lond., New Ser. ii. 42, ♂, ♀ (1852).

The female is black, clothed with black pubescence, and shining; the head closely punctured; the thorax more finely and sparingly so, and rounded behind; wings fusco-hyaline towards the base, darker beyond the enclosed cells, and also in the marginal and submarginal cells; with a golden iridescence towards the base, and purplish towards the apex. The male is clothed with fulvous-yellow pubescence, and has a longitudinal, obscure, darkish line on the thorax and abdomen; on the face a line of black pubescence; a broad yellow stripe on each side of the face, which extends to the hinder margin of the vertex. Length of the female, which is narrower than the species of the genus usually are, ten lines; of the male nine lines.

Hab.—North China; Java.

59. *Xylocopa bryorum.*

Apis bryorum, Fabr. Ent. Syst. ii. 321, ♂.

Bombus bryorum, Fabr. Syst. Piez. 348.

Xylocopa dimidiata, St. Farg. Hym. ii. 199, ♀.

This species very closely resembles *X. æstuans*, in both sexes; the female differs in having the head clothed with cinereous pubescence, and the abdomen has sometimes, but rarely, a little yellow pubescence in the middle of the base, this is usually abraded; the wings are a degree lighter than in *X. æstuans*, the male scarcely differs from it; it is usually rather larger than any specimens of *X. æstuans* male, the posterior tibiæ are more incrassate, and the pubescence on the tarsi is more ferruginous; the species is also a degree larger.

Hab.—Australia.

60. *Xylocopa indica.*

Xylocopa indica, Klug, Mag. der Gesell. Nat. für zu Berlin, 264 (1807) (var. *X. fenestrata* ?)

Black; the pubescence black; the wings violaceous, with some hyaline lines between the nervures at their base more or less observable. Length about ten lines.

Hab.—Tranquebar.

Klug does not indicate the sex of this species, but there can be little doubt of his description applying to a male; he indicates the difference between his species and the *X. fenestrata* to be the absence of a minute ovate impression at the basal, lateral margin of the third segment of the abdomen, which is covered with golden tomentum, or down; this minute spiracular impression is to be distinguished in many species, but appears to be most observable in *X. fenestrata;* in a series, however, of the latter, it will be found to be frequently denuded of the golden down, and such examples I believe must be referred to Klug's *X. indica.*

61. *Xylocopa lunata.*

Xylocopa lunata, Klug, Mag. der Gesell. Nat. für zu Berlin (1807), 264, tab. vii. fig. 2, ♀.

Black, the pubescence black, the wings violaceous; the posterior pair with a large hyaline semi-lunate spot. Length nine and a half lines.

Hab.—Tranquebar.

*62. *Xylocopa ignita.*

Female.—One of the smallest species of the genus; it is black, the head semi-opaque, the thorax and abdomen shining; the head closely punctured; a sharp carina in front of the anterior ocellus; the thorax finely punctured, the mesothorax having a shining impunctate space on its disk; the metathorax rounded; the abdomen evenly and rather more strongly punctured. On the clypeus is a short pubescence consisting of a mixture of griseous and black; on the legs, sides of the thorax, and the fringe of the abdomen, it is black; at the extreme apex of the latter

there is a little ferruginous pubescence; wings dark brown, with vivid purple iridescence. Length six lines.

Hab.—Bombay; Canara; Tarancore.

63. *Xylocopa flavo-nigrescens.*

Xylocopa flavo-nigrescens, Smith, Cat. Hym. Ins., Apidæ, ii. 354, ♂.

This insect is unique in the British Museum; no second specimen has fallen under my notice. It is black; the front of the head, the thorax, and tegulæ of the wings, and also the base of the abdomen, are clothed with bright yellow pubescence; the anterior and intermediate tarsi have a long fringe behind, of the same colour; the rest of the abdomen has an olive pubescence, which deepens gradually into black at the apex of the abdomen; at the base of the fourth and fifth segments are narrow bands of bright yellow pubescence, and there is a little white in the middle of the base of the seventh; the legs have black pubescence; wings brown, with purple iridescence. Length 11 lines.

Hab.—Silhet.

64. *Xylocopa acutipennis.*

Xylocopa acutipennis, Smith, Cat. Hym. Ins., Apidæ, ii. 355, ♂.

This male is black; the clypeus, scape in front, and a minute spot at the base of the mandibles, yellow; the anterior tibiæ and tarsi thickly clothed above with pale fulvous pubescence, the intermediate and posterior tarsi fringed with ferruginous; the thorax has, anteriorly, a little pale-fulvous pubescence intermixed with the black; wings pale brown, with a purple iridescence; the head small, the eyes large, the apex of the abdomen with a tuft of long brownish-black pubescence; the wings pointed at their apex. Length 10 lines.

Hab.—Silhet.

*65. *Xylocopa pictipennis.*

Female.—Entirely black; head closely punctured and semi-opaque; thorax above finely punctured, with the disk impunctate and shining; abdomen punctured, the basal segment finely and distantly so; the middle of the apical margins narrowly impunctate; the sides fringed

with thick black pubescence; the thorax rounded behind; wings brown-black, with a splendid purple iridescence, and tinged with bright blue, and green tints, at their base. Length one inch.

Hab.—Java.

66. *Xylocopa phalothorax.*

Xylocopa phalothorax, St. Farg. Hym. ii. 194, ♀; Smith, Cat. Hym. Ins., Apidæ, ii. 363.

This very distinct species is black, and its pubescence also black; that on the vertex of the head, on the thorax above, also down the sides of the thorax anteriorly, is white; wings brown, with a violet iridescence. Length 10 lines.

Hab.—Sumatra.

*67. *Xylocopa sonorina.*

Female.—Black; head and thorax closely and moderately punctured; the mesothorax smooth, impunctate and shining on the disk; metathorax rounded behind; abdomen shining, rather finely punctured, most closely so at the sides above; the pubescence entirely black, except that on the anterior tarsi beneath, which is ferruginous; the claws of the tarsi ferruginous; wings fusco-hyaline, with a darker cloud beyond the enclosed cells, and adorned with a bright purple and coppery iridescence. Length ten to eleven lines.

Hab.—Sunda Islands.

68. *Xylocopa volatilis.*

Xylocopa volatilis, Smith, Journ. Proc. Linn. Soc. vi. 61, ♂.

Clothed with yellow pubescence; that on the abdomen has a greenish tinge; on the tarsi it is fulvous; on the margins of the abdomen and on the posterior tarsi it is ferruginous; wings fusco-hyaline, their apical margins beyond the enclosed cells darker, with a coppery and violet iridescence; the antennæ beneath, the anterior margin of the clypeus, and a line down its centre, as well as a spot at the base of the mandibles, reddish-yellow.

Hab.—Celebes (Menado).

69. *Xylocopa diversipes.*

Xylocopa diversipes, Smith, Journ. Proc. Linn. Soc. vi. 61, ♂.

Black; the head, thorax, base of the abdomen, and the anterior and intermediate legs, clothed with fulvous pubescence; on the intermediate tarsi it is very long and rufo-fulvous; the abdomen fringed with black pubescence, that on the apical segment being ferruginous; the clypeus, the scape in front, and flagellum beneath, yellow; the wings subhyaline, the iridescence violet and purple, the nervures ferruginous. Length twelve lines.

Hab.—Celebes.

*70. *Xylocopa nigro-cærulea.*

Female.—The head, thorax, and legs, black; the abdomen obscure blue-black; the flagellum of the antennæ beneath, except the first and second joints, testaceous The head strongly punctured; the thorax punctured and rounded behind; clothed anteriorly, at the sides and beneath, with black pubescence; the claw-joint of the tarsi rufo-piceous; wings brown, not dark, with bright coppery iridescence. Abdomen evenly and rather finely punctured; fringed towards the apex at the sides with black pubescence. Length ten lines.

Hab.—Celebes; Tondano.

71. *Xylocopa nobilis.*

Xylocopa nobilis, Smith, Journ. Proc. Linn. Soc. Zool. iv. 8, ♀.

Black; the anterior and posterior margin of the thorax narrowly edged with bright yellow pubescence; the basal segment of the abdomen covered with the same; the three apical segments clothed with ferruginous pubescence, the second and third margined with the same; wings dark brown-black, with a bright effulgence of green and copper towards the base and of purple beyond the enclosed cells. Length eleven and a half lines.

Hab.—Celebes.

72. *Xylocopa coronata.*

Xylocopa coronata, Smith, Journ. Proc. Linn. Soc. Zool. v. 135, ♀.

Black, and clothed with black pubescence; the disk of the thorax and the abdomen above smooth and shining;

the face has a mixture of yellow and griseous pubescence; that on the vertex and behind the eyes is short, dense, and of a bright yellow; wings dark brown, with a bright purple iridescence. Length nine and a half lines.

Hab.—Island of Kaisa (Eastern Archipelago).

73. *Xylocopa insularis.*

Xylocopa insularis, Smith, Journ. Proc. Linn. Soc. ii. 48, ♂.

Black; the head and thorax clothed with rufo-fulvous pubescence; the disk of the thorax smooth and shining; the eyes large and approximating at the vertex; the anterior wings pointed at their apex, brown, and having a coppery and violet iridescence. Abdomen shining and punctured; the basal and lateral margins with a thick fringe of black pubescence; the apical margins of the segments depressed and slightly rufo-piceous.

Hab.—Borneo.

74. *Xylocopa Philippinensis.*

Xylocopa Philippinensis, Smith, Cat. Hym. Ins., Apidæ, ii. 357, ♀.

Black; the pubescence black, except a little on each side of the thorax posteriorly, and that on the basal segment of the abdomen, which is yellow; wings brown, with a purple iridescence; the thorax truncate and sharply margined behind. Length one inch.

Hab.—Philippine Islands.

*75. *Xylocopa bombiformis.*

Female.—The thorax, legs, and sides of the abdomen, densely covered with black pubescence; that on the thorax is short, giving it a velvety texture; the metathorax truncate and sharply margined; the front of the head densely and strongly punctured; behind the eyes it is smooth, shining, and almost impunctate; the abdomen closely punctured; the basal segment covered with short, dense black pubescence; the entire abdomen has a thin, short pubescence; wings brown, not dark, and palest towards their base, and having a fine purple iridescence, tinged with green towards their apex. Length eleven to twelve lines.

Hab.—Philippines.

76. *Xylocopa rufipes.*

Xylocopa rufipes, Smith, Trans. Ent. Soc. Lond. New Ser. ii. 42, ♀; Cat. Hym. Ins., Apidæ, ii. 356.

This species is black, the thorax above and at the sides is clothed with ochraceous pubescence, there is also a little on the first and second segment of the abdomen; the intermediate and posterior tarsi are covered with bright rufo-fulvous pubescence; the wings hyaline and clouded beyond the enclosed cells; beneath, the segments are fringed with ferruginous hairs; length nine lines.

Hab.—North China.

77. *Xylocopa simillima.*

Xylocopa simillima, Smith, Cat. Hym. Ins., Apidæ, ii. 357, ♀.

This species has the appearance of being a small race of the common *X. frontalis* of Brazil; both are black and have the three basal segments ferruginous, with their apical margins black; but the Australian bee has no frontal ridge before the two posterior ocelli, and it is only ten lines in length, whereas *X. frontalis* is at least fourteen.

Hab.—Australia.

It is possible that the locality of this bee is incorrect. There are two specimens in the British Museum; one purchased at a sale, the other, an old specimen, is, I believe, from Dr. Leach's collection.

Species of South America, Brazil, and the West India Islands.

78. *Xylocopa grossa.*

Centris grossa, Drury, Illus. Exot. Ent. i. 108, pl. 45, fig. 3, ♀.

Apis iricolor, Kirby, Mon. Apum Angl. ii. 310, pl. 17, fig. 9.

Xylocopa iricolor, St. Farg. Hym. ii. 185.

Xylocopa grossa, Smith, Cat. Hym. Ins., Apidæ, ii. 361.

The colour varying in different lights to purple, green, or blue; shining, finely and distantly punctured; the

pubescence black, and only found on the cheeks, legs, and sides of the abdomen; the legs are blue, the abdomen brilliant violet beneath; wings fusco-hyaline, with a faint violet tinge towards their apex. The male closely resembles the other sex; the eyes very large and nearly uniting on the vertex; the clypeus and the face on each side of it yellowish-white.

Hab.—Jamaica; Antilles (West Indies).

79. *Xylocopa viridis.*

Xylocopa viridis, Smith, Cat. Hym. Ins., Apidæ, ii. 360, ♂.

The male is green, the abdomen having a blue tinge; the labrum, clypeus, inner orbits of the eyes, a line on the mandibles, and the basal joint of the antennæ in front, yellowish-white; the pubescence on the thorax, above, pale fulvous; that on the entire insect beneath is nearly white; the anterior femora and tibiæ beneath, the apical joints of the anterior tarsi, and all the claw-joints, rufo-piceous; wings subhyaline, with the nervures ferruginous. The apical margins of the segments of the abdomen with a narrow fringe of white pubescence, slightly interrupted in the middle; the apical segment fringed with black pubescence. The female closely resembles the male, the posterior legs having the usual brush of hairs, white outside, black within, and tipped with ferruginous at the apex beneath; there is also a little ferruginous pubescence at the extreme apex of the abdomen, and on each side of it is a fringe of black hairs; the apical margins of the second and following segments have a narrow white marginal fringe, more or less interrupted in the middle. Length of the sexes seven lines.

Hab.—St. Paulo; Santarem (Brazil).

80. *Xylocopa barbata.*

Xylocopa barbata, Fabr. Syst. Piez. 141, ♀; St. Farg. Hym. ii. 190; Smith, Cat. Hym. Ins., Apidæ, ii. 361.

Black, with a violet tinge; the cheeks covered with white pubescence; the face has also a little white pubescence; the two apical segments of the abdomen fringed with white; the wings dark brown, with a purple and violet iridescence. The male is of a brighter blue or

violet colour; the eyes very large, meeting on the vertex; the labrum and clypeus whitish; the wings are of lighter colour. Length five to six lines.

Hab.—S. America; Cayenne; Brazil; Mexico.

81. *Xylocopa Brasilianorum.*

Apis Brasilianorum, Linn. Syst. Nat. 961, ♂; Fabr. Ent. Syst. ii. 323.

Xylocopa Brasilianorum, Latr. Ins. iii. 380; Fabr. Syst. Piez. 340; St. Farg. Hym. ii. 201; Guild. Trans. Linn. Soc. xiv. 315, tab. 8, fig. 1 ♀, 5 ♂.

Xylocopa chrysoptera, Latr. Obs. Zool. Humb. & Bonp. ii. 93, ♀, pl. 38, f. i.

Xylocopa teredo, Guild. Trans. Linn. Soc. xiv. 313, Tab. viii. fig. 1 ♀, 5 ♂; Westw. Nat. Libr. (Jardine), Entom. vi. 268, pl. 21, fig. 1 ♂, 2 ♀; Smith, Cat. Hym. Ins., Apidæ, ii. 360.

That the male is the *Apis Brasilianorum* of Linnæus I have no doubt whatever; it in every respect agrees with the description in the "Systema Natura," which is fortunately more ample than is usual in the descriptions of the species of the genus *Apis*. Lansdowne Guilding referred the insect to the Linnean species, with a doubt; but after an examination of a large number of fulvous-coloured males of different species of the genus, I feel satisfied of this being the Linnean one. The female I do not think can be the *X. morio* of Fabricius, who describes the wings as "Alis cyaneis;" he also adds in "Mus. Dom. Banks," the specimen must have been lost in some way, as it was not in that collection when it came into the possession of the British Museum. The female of *X. Brasilianorum* has the wings, as described by Prof. Westwood, of "a brassy hue with purple reflections;" it is broad, black, shining, and has the head almost as wide as the thorax; the abdomen fringed with black pubescence; the thorax is rounded posteriorly, as is the case in all the South American species that I have seen. Length thirteen lines. The male is of a fulvous-yellow; the clypeus, and front of the scape of the antennæ, more or less yellow; the apical mar-

gins of the segments of the abdomen are more or less fuscous; the coxæ and femora nigro-piceous, the apex of the latter being fulvous; the anterior femora nigro-piceous behind. Length ten lines.

Hab.—Brazil; Cayenne; S. America; Peru.

82. *Xylocopa frontalis.*

Apis frontalis, Oliv. Ency. Méth. iv. 64, ♀.

Xylocopa frontalis, Fabr. Syst. Piez. 340; St. Farg. Hym. ii. 175, ♀; Smith, Cat. Hym. Ins., Apidæ, ii. 359.

Xylocopa morio, Fabr. Syst. Piez. 338?

Xylocopa fasciata, St. Farg. Hym. ii. 202 ♂.

The female is black, and has an elevation in front of each of the posterior ocelli, exactly like those on the vertex of *X. morio*, from which species it only differs in having the first three or four segments of the abdomen ferruginous, with their apical margins more or less broadly black. I believe this insect to be a variety of *X. morio*. The male is of a fulvous-yellow, its antennæ being only slightly fuscous above towards their base; the first segment of the abdomen is narrowly bordered with black; the rest of the segments very broadly so, having only a narrow line of yellow at their basal margins; the wings are flavo-hyaline, the nervures dark ferruginous. Length of male fourteen lines; of female fifteen to sixteen lines. The sexes are united on the authority of Mr. Dyson, who sent them from Venezuela with the indication of their affinity.

Hab.—Venezuela; Brazil; Cayenne.

83. *Xylocopa fimbriata.*

Xylocopa fimbriata, Fabr. Syst. Piez. 340, ♀; Schomb. Faun. Flo. Brit. Guiana, iii. 591; St. Farg. Hym. ii. 177; Smith, Cat. Hym. Ins., Apidæ, ii. 359.

Xylocopa corniger, Westw. Nat. Libr. Entom. vi. 270, pl. 21, fig. 3, ♀.

Xylocopa cornuta, St. Farg. Hym. ii. 176, ♀.

Xylocopa Cajennæ, St. Farg. Hym. ii. 203, ♂; La Sagra's Hist. L'Ile de Cuba, 776.

There can be no doubt of this species being identical

with the two I have given as synonyms; the original description is, I think, conclusive; the affinity of the species to that of *X. frontalis*, the elevation of the lateral frontal ridges, are clearly pointed out by Fabricius.

The female is a large black insect that has a ridge on the vertex of the head; it is widely interrupted in the middle, and is more or less elevated laterally, forming tubercles or horns; they vary greatly in their elevation, but are always outside the posterior ocelli; in *X. frontalis* they are in front of them. I have compared the male with St. Fargeau's type; its pubescence is of a fulvous-red, but old examples lose this brightness and become tawny-yellow; the antennæ are slightly fuscous above, the anterior femora above, and the intermediate and posterior pairs, are entirely pitchy-black; the apex of the abdomen is densely covered with long rufo-fulvous pubescence; wings flavo-hyaline, slightly fuscous towards their apical margins. Length of the female thirteen to fourteen lines; of the male twelve lines.

Hab.—S. America; Cayenne; Brazil; Demerara; Mexico; Barbadoes.

84. *Xylocopa morio.*

Apis morio, Fabr. Ent. Syst. ii. 315, ♀.

Xylocopa morio, Fabr. Syst. Piez. 338; Latr. Ins. iii. 380; Halid. Trans. Linn. Soc. xvii. 319; Smith, Cat. Hym. Ins., Apidæ, ii. 359.

Xylocopa nitens, St. Farg. Hym. ii. 176, ♀.

A large black species, its pubescence black; shining, with the thorax in the middle, above, and the base of the abdomen, impunctate; the head closely punctured, with an elevation in front of each of the posterior ocelli; the anterior angles of the clypeus subtuberculate; the sides of the face pubescent; wings dark brown, with a bright green and violet iridescence. Length 16 lines.

Hab.—Amazons; Nicaragua; Demarara; Mexico.

85. *Xylocopa æneipennis.*

Xylocopa æneipennis, De Geer, Mém. iii. 573, pl. 28, fig. 8, ♀; St. Farg. Hym. ii. 186; Smith, Cat. Hym. Ins., Apidæ, ii. 360.

Black: the pubescence black; the disk of the thorax,

and the scutellum, shining and impunctate; the abdomen thinly covered with short pubescence, the lateral margins being thickly fringed; the wings subhyaline, and having a brilliant coppery lustre, the apical margins with a violet tinge. Length ten to eleven lines.

Hab.—Cayenne; Parana; Mexico.

86. *Xylocopa grisescens.*

Xylocopa grisescens, St. Farg. Hym. ii. 178, ♀.

This is a large conspicuous insect; it is black, with the thorax above and a portion beneath the wings covered with dense griseous pubescence; there is also a little on the hinder margin of the vertex; from the disk of the mesothorax it is usually more or less abraded, leaving a smooth shining space; wings dark brown, with green and violet iridescence. Length thirteen to fifteen lines.

Hab.—Brazil.

This species may possibly be the *Xylocopa lanigera* of the Hoffmanseggian Collection; I have received it as such, but I cannot ascertain that it has ever been described under that name.

87. *Xylocopa aurulenta.*

Bombus aurulentus, Fabr. Syst. Piez. 351, ♀.

Xylocopa aurulenta, St. Farg. Hym. ii. 192; Smith, Cat. Hym. Ins., Apidæ, ii. 361.

Black: the thorax clothed above with fulvous pubescence; the disk of the thorax shining and impunctate; the wings fusco-hyaline, with a bright coppery iridescence, tinted with violet at their apex. Length seven to eight lines.

Hab.—South America; Cayenne; Brazil.

88. *Xylocopa Augusti.*

Xylocopa Augusti, St. Farg. Hym. ii. 187, ♀; Smith, Cat. Hym. Ins., Apidæ, ii. 360.

This conspicuous insect is black, its pubescence black, except the fringe of the abdomen, which is ferruginous; the abdomen beneath is dark rufo-piceous, with the apical margins of the segments paler; the wings brown, with a bright gold and violet iridescence. Length eleven lines.

Hab.—Brazil; South America (Rio Grande).

89. *Xylocopa colona.*

Xylocopa colona, St. Farg. Hym. ii. 185, ♀ ; Smith, Cat. Hym. Ins., Apidæ, ii. 358.

A small black species, with fusco-hyaline wings, which have a brilliant golden iridescence, and with slight violet tints, observable in certain lights ; the carina, in front of the anterior ocellus, terminates in a small tubercle between the antennæ ; the sides of the thorax and abdomen densely covered with black pubescence ; the disk of the thorax impunctate and shining ; the abdomen finely punctured. Length nine lines.

Hab.—Cayenne ; Brazil ; Barbadoes.

90. *Xylocopa carbonaria.*

Xylocopa carbonaria, Smith, Cat. Hym. Ins., Apidæ, ii. 358, ♀.

A small black species ; the flagellum of the antennæ piceous beneath ; the margins of the clypeus elevated laterally ; a raised carina in front of the anterior ocellus ; head closely punctured ; the face pubescent on each side ; the thorax punctured, and pubescent, with a triangular smooth, shining and impunctate space on the disk ; abdomen punctured, and thinly covered with a short black pubescence, the sides with a longer fringe ; wings dark brown, with a bright violet iridescence. Length eight lines.

Hab.—Tapajos.

91. *Xylocopa dimidiata.*

Xylocopa dimidiata, Latr. Obs. Zool. (Humb. & Bonp.) ii. 95, ♀, pl. xxxviii. fig. 2, ♀.

Black and shining, with the thorax behind, and the abdomen above, more or less green, and tinted with violet in the middle of the segments ; the wings are blue, tinted with violet. Length nine and a half lines.

Hab.—South America ; Ega.

92. *Xylocopa macrops.*

Xylocopa macrops, St. Farg. Hym. ii. 209, ♂ ; Smith, Cat. Hym. Ins., Apidæ, ii. 359.

Black : the labrum and clypeus white ; the thorax has a violet tint, the scutellum ciliated with white pubescence ;

the abdomen is obscurely tinted with green; the first segment with black pubescence, and with a band of white in the middle; beneath violet, with a testaceous spot on each side of the intermediate segments of a triangular shape; wings fusco-hyaline, with a faint violet iridescence. Length nine lines.

This is a species I have not seen.

Hab.—Brazil.

93. *Xylocopa pulchra.*

Xylocopa pulchra, Smith, Cat. Hym. Ins., Apidæ, ii. 361, ♀.

This small and well-marked species has the head, thorax and legs black; the flagellum of the antennæ, except the first and second joint, fulvous beneath; disk of the thorax shining and impunctate; wings fulvo-hyaline, the nervures ferruginous; the posterior tarsi have the pubescence within of a mixture of black and ferruginous; outside it is nearly white, except at the apex, which is black; the abdomen is shining and finely punctured, the second and following segments have a broad fascia, interrupted in the middle, of ochreous pubescence. Length six and a half lines.

Hab.—Rio Janeiro.

94. *Xylocopa splendidula.*

Xylocopa splendidula, St. Farg. Hym. ii. 190, ♀; Smith, Cat. Hym. Ins., Apidæ, ii. 360.

A small species of a nigro-violaceous colour; the pubescence black; the antennæ testaceous beneath, except the three basal segments; the wings subhyaline, with a green and violet iridescence. Length seven lines.

Hab.—Brazil; Nicaragua.

95. *Xylocopa virescens.*

Xylocopa virescens, St. Farg. Hym. ii. 186, ♀; Smith, Cat. Hym. Ins., Apidæ, ii. 362.

Female.—Entirely black, with the pubescence black; the flagellum of the antennæ, except the basal joints, pitchy; wings brown-black, with a violet tint, and having a shining green iridescence. Length thirteen lines.

Hab.—Cayenne.

*96. *Xylocopa anthophoroides.*

Female.—Head and thorax black, the abdomen black, with a faint purple or violet tinge; the head has a fulvous pubescence on the vertex, on the face it inclines to griseous, it is also griseous on the cheeks. The thorax is clothed above with fulvous pubescence; beneath and at the sides, as well as on the coxæ and femora beneath, it is griseous; on the tarsi beneath the pubescence is ferruginous, as it is also on the apical portion of the posterior pair above, otherwise the legs have a griseous pubescence; the apical joints of the tarsi ferruginous; the wings fulvo-hyaline, their apical margins slightly clouded, the nervures ferruginous. Abdomen: the two basal segments thinly covered with short, pale-fulvous pubescence, the apical margins of the segments fringed with cinereous pubescence, as are also the two apical segments at the sides; the extreme apex with a tuft of ferruginous pubescence; all the segments beneath are narrowly rufo-testaceous, and are fringed with cinereous pubescence. Length six and a half lines.

Hab.—St. Paulo (Brazil); Mexico.

97. *Xylocopa artifex.*

Female.—Black, with black pubescence; that on the head being thinly scattered on the face and cheeks; an impressed line in front of the anterior ocellus, which terminates at a short raised line between the antennæ; the disk of the thorax and the scutellum smooth and shining; the claws only, not the claw-joint, ferruginous; the wings fusco-hyaline, and having a brilliant coppery iridescence, their apical portion tinted with violet; the abdomen is thinly covered with short black pubescence, its sides and apex being thickly fringed. Length seven lines.

Hab.—South Brazil.

This species is in every respect coloured the same as *X. æneipennis*, the wings being also of the same colour. St. Fargeau gives the variation of that species in length to be from six to ten lines, a difference not approached by any other species; the individuals measuring six lines were probably the present species. In one particular *X. artifex* differs from all examples which I refer to

X. æneipennis: its head is longer than broad, in the other species it is broader than long.

98. *Xylocopa lucida.*

Female.—Shining blue; finely but distantly punctured; on the vertex of the head, the disk of the thorax, and on the three first segments of the abdomen, are tints of violet; a little snow-white pubescence on the anterior margin of the clypeus; the wings fuscous, and with a violet iridescence; the apex of the abdomen fringed with black pubescence and a short white fringe on each side of it. Length eight lines.

Hab.—Para.

This unique example is from the private collection of Mr. H. W. Bates. This insect very closely resembles the female of *X. micans;* it may possibly be a variety of it, but it differs as follows from that species:—The deep pit observable in *micans* on each side of the clypeus, not upon it, is wanting; it has a snow-white tuft of hair on the anterior margin of the clypeus; the mesothorax is glassy smooth, and has only a few minute widely-scattered punctures at the sides; the metathorax is destitute of pubescence; the abdomen is much more finely punctured, and the insect is of a bright blue, not obscure violet; the wings are darker.

*99. *Xylocopa ornata.*

Female.—Head blue-black, with tints of violet on the vertex and of green on the clypeus; the sides of the face with griseous pubescence. Thorax obscure nigro-æneous above, with violet tints on the disk, which is smooth and shining; on the scutellum it is brassy; beneath green and with griseous pubescence; the legs are nigro-piceous beneath, and tinted with green above; the pubescence on the outside of the intermediate and posterior tibiæ is fulvous, within it is black; the wings subhyaline, and with a coppery iridescence; the nervures rufo-piceous. Abdomen of a shining brass colour, brightest towards the apex; punctured, but the apical margins of the segments are smooth and shining; the abdomen is covered with short fulvous pubescence, and, towards the apex, the sides are fringed with the same. Length seven lines.

Hab.—St. Paulo.

100. *Xylocopa rotundiceps.*

Female.—Entirely black, and with black pubescence, which is dense on the face and cheeks, as it is also on the thorax in front and on its sides; that on the legs is of the same colour, but on the anterior tarsi beneath it is ferruginous. The head large, nearly as wide as the thorax, the vertex broad and rounded laterally behind the eyes; more strongly and closely punctured than the thorax, which is impunctate on the disk and is rounded behind. The abdomen shining, the basal segment with only a few shallow, fine punctures; the two following segments sparingly punctured in the middle, but the rest of the abdomen much more closely and strongly punctured. Length eleven lines.

Hab.—Brazil.

*101. *Xylocopa similis.*

Female.—Black; the thorax above, the sides, beneath the wings, and the basal segment of the abdomen, clothed with ferruginous pubescence; on the thorax beneath, and all other parts of the insect, it is black; the disk of the thorax smooth, shining, and impunctate; the wings fusco-hyaline, with bright-coppery iridescence, and tinged with purple towards their apex. Length ten lines.

Hab.—Para.

This species greatly resembles *X. aurulenta*, and only differs in having the ferruginous pubescence of the thorax continued on to the first segment of the abdomen, and in being two or three lines longer.

102. *Xylocopa varians.*

Female.—Dark blue, with changeable tints of green, the latter colour predominating on the abdomen; the face covered with short griseous pubescence, there is also a little on the cheeks. The disk of the thorax is shining and impunctate; behind the scutellum is a mixture of griseous and sooty-black pubescence; on the tarsi beneath the pubescence is fulvous, above it is of a silvery brightness; on the posterior tarsi within it is black; the apical joints of the tarsi ferruginous; the wings subhyaline, with a coppery iridescence. Abdomen punctured, with the apical margins of the segments narrowly impunctate; the sides of the abdomen fringed with black pubescence and

with a little that is ferruginous at the extreme apex; beneath, the apical margins of the intermediate segments are fringed laterally with white pubescence. Length seven lines.

Hab.—South Brazil.

*103. *Xylocopa metallica.*

Female.—Head blue-black, the vertex bright blue, and sparingly punctured; the cheeks with a purple tinge; the labrum with a single blunt, shining tubercle. Thorax black, with a slight tint of blue and violet on the disk of the mesothorax, which is smooth, shining, and impunctate; the tegulæ, and anterior tibiæ above, blue; wings fuscous, with a purple iridescence. Abdomen: the two basal segments metallic green; from thence to the apex of the abdomen gradually changing into bright, burnished copper; these segments have a fulvous pubescence, and the sides are fringed with longer pubescence of the same colour; beneath of a violet blue; the three apical segments fringed with fulvous pubescence. Length nine lines.

Hab.—Para.

This unique specimen was formerly in the private collection of Mr. H. W. Bates.

*104. *Xylocopa ordinaria.*

Female.—Black and closely punctured, the disk of the mesothorax impunctate. The tubercle between the antennæ slightly raised; the lateral margins of the clypeus raised at its base; the antennæ beneath, except the three basal segments, obscurely testaceous; the wings dark brown, and with blue and violet iridescence; the sides of the abdomen, as well as its apex, thickly fringed with black pubescence; at the extreme apex is a little that is ferruginous; beneath, covered with somewhat oblong punctures, and with a central raised, sharp carina that runs from the base to the apex. Length eleven lines.

Hab.—Brazil (Tejuca).

105. *Xylocopa affinis.*

Xylocopa affinis, St. Farg. Hym. ii. 210, ♂; Smith, Cat. Hym. Ins., Apidæ, ii. 361.

One of the smallest species of the genus. Head and thorax black, the abdomen obscure violet. The labrum

and the face below the antennæ white; the pubescence on the thorax and the extreme apex of the abdomen rufous; as it is also on the margins of one or two of the apical segments; the pubescence on the legs is of a mixture of black and rufous. Length five lines.

Hab.—Cayenne.

106. *Xylocopa fervens.*

Xylocopa fervens, St. Farg. Hym. ii. 196, ♂; Smith, Cat. Hym. Ins., Apidæ, ii. 359.

A large black species; the pubescence on the head and thorax rufous; the anterior and intermediate legs have a mixture of black and rufous pubescence. The basal segment of the abdomen and the cilia on the fifth and the sixth segments are rufous; wings brown-black, with a violet iridescence. Length fourteen lines.

Hab.—Cayenne.

St. Fargeau gives the above locality, but I am inclined to think he is wrong, and that the insect is a fine variety of *X. flavo-rufa* from S. Africa.

107. *Xylocopa erratica.*

Male.—Black and punctured; the head and abdomen closely so; the disk of the thorax impunctate, also a narrow smooth line down the middle of the abdomen; the pubescence griseous; on the body beneath, and on the legs it is palest; on the posterior legs, above, it is black; the scape nigro-piceous in front; the flagellum, except the two basal joints, fulvous beneath; the clypeus, and a broad line at the inner orbits of the eyes, which becomes narrower at their summit, and then terminates in an ovate spot on the vertex, yellow, a black line down the middle of the clypeus; the wings subhyaline, with coppery iridescence, and tinged with violet at their apex. Length seven lines.

Hab.—South Brazil.

*108. *Xylocopa electa.*

Female.—Head and thorax black, the abdomen nigro-æneous; the labrum with three small tubercles; a carina in front of the anterior ocellus, and also a slightly raised one from the posterior ocelli which runs to the margin of the vertex. The disk of the thorax, and the scutellum, shining and impunctate, or with only a few very fine distant punc-

tures; wings subhyaline, their apical margins with a fuscous cloud, and having a coppery iridescence. Abdomen evenly and finely punctured above, with the apical margins narrowly shining, impunctate, and rufo-testaceous; the apical segment fringed with black pubescence; on the fifth segment the fringe is white; the ventral segments have a little, white, marginal fringe on each side. Length six lines.

Hab.—Venezuela.

109. *Xylocopa nigro-cincta.*

Xylocopa nigro-cincta, Smith, Cat. Hym. Ins., Apidæ, ii. 354, ♀.

The head and thorax black; the abdomen ferruginous, the apical margins of the segments with black fasciæ; the apical segment black; the sides ciliated with black pubescence; beneath is a central longitudinal carina; the wings fusco-ferruginous, with a splendid violet iridescence. Length ten lines.

Hab.—South America.

110. *Xylocopa viridigastra.*

Xylocopa viridigastra, St. Farg. Hym. ii. 186, ♀; Smith, Cat. Hym. Ins., Apidæ, ii. 362.

Head and thorax black, abdomen blue-black, with bright violet tints, observable in certain lights, the sides thinly fringed with black pubescence; the entire abdomen has a thin, short pubescence; the wings fuscous, with tints of purple and violet iridescence. The male has the abdomen more brightly coloured, having shades of purple and blue; the clypeus, the face on each side of it, and the scape in front, yellow. Length nine to twelve lines.

Hab.—Peru.

111. *Xylocopa mordax.*

Female.—Entirely black, and with black pubescence; that on the face and cheeks is long and dense; on the thorax in front, and on the sides, it is short and velvety; the legs very pubescent, and the fringe on the sides and apex of the abdomen is thick and tufted. The upper margin of the clypeus elevated and shining; the labrum

with three teeth, or tubercles; the flagellum of the antennæ beneath, beyond the second joint, is rufo-testaceous; the wings brown-black and adorned with a brilliant purple iridescence; the inferior margin of the posterior wings is coppery; the abdomen finely punctured. Length eleven lines.

Hab.—San Domingo; Island of Nevis (Lesser Antilles).

Species of North America.

112. *Xylocopa virginica.*

Apis virginica, Drury, Illus. Exot. Ins. i. 96, pl. 43, fig. 1, ♂; Fabr. Ent. Syst. ii. 318, 15.
Bombus virginicus, Fabr. Syst. Piez. 346.
Xylocopa virginica, Westw. ed. Drury (1837), pl. 43, fig. 1; Smith, Cat. Hym. Ins., Apidæ, ii. 362; Cresson, Hym. Texana, 283.
Centris carolina, Fabr. Syst. Piez. 357, ♂.
Xylocopa carolina, St. Farg. Hym. ii. 207, ♂, ♀; Say, Bost. Journ. Nat. Hist. i. 412; Smith, Cat. Hym. Ins., Apidæ, ii. 363.

The sexes of this species are similarly coloured; they are black, the pubescence on the thorax and basal segment of the abdomen above have a pale rufo-cinereous pubescence; there is also a little on the anterior tarsi; the rest of the pubescence is black; the male has the eyes large, and approximating on the vertex; and has the clypeus, and the face on each side of it, as high as the insertion of the antennæ, yellowish-white.

Hab.—United States; Florida; Carolina; Virginia; Texas; Cuba.

113. *Xylocopa texana.*

Xylocopa texana, Cresson, Hym. Texana, 283, ♂, ♀.

This species resembles *X. virginica,* and is about the same size, from nine to ten lines long; but it is of a blue, or dark-green colour, varying in different specimens in that respect; the head is black; and faintly blue on the vertex; the thorax usually dark green, the abdomen dark green, or olive. The pubescence of the female is pale ochraceous on the thorax above, there is a little beneath the wings, also on the basal segment of the abdomen, and on each side the

apical segment; the rest of the pubescence is black. In the male, the pubescence of the head, thorax, and basal segment of the abdomen, is ochraceous; on the three apical segments is a mixture of black and ochraceous pubescence; the labrum and clypeus yellowish-white, eyes approximating on the vertex.

Hab.—Texas.

114. *Xylocopa tabaniformis.*

Xylocopa tabaniformis, Smith, Cat. Hym. Ins., Apidæ, ii. 362, ♀.

Black.—The face and cheeks with short griseous pubescence; the thorax clothed with hoary pubescence, intermixed with sooty-black; the second, and three following segments have their apical margins bordered laterally with ochraceous bands; the posterior tibiæ, and the intermediate and posterior tarsi, are clothed outwardly with ochraceous pubescence; wings subhyaline, slightly clouded at their apex. The male closely resembles the female, but has the clypeus and labrum yellow, and only the second and third segments of the abdomen bordered with ochraceous pubescence; the following segments are fringed with black. Eight lines long.

Hab.—Mexico (Oajaca).

115. *Xylocopa cyanea.*

Male.—The head black; the thorax, legs and abdomen dark blue; the thorax exhibits, above, tints of green and violet; the mesothorax has an oblong impunctate space on the disk, its sides being closely and rather finely punctured; the abdomen finely and closely punctured. The labrum, clypeus, and a triangular spot above it and uniting with it, yellowish-white. The pubescence on all the tarsi, beneath, is ferruginous; the anterior pair being fringed with a mixture of fuscous and ferruginous pubescence; the wings are fusco-hyaline, and have a coppery iridescence. There is a little cinereous pubescence at the sides of the thorax, and also on the front of the thorax and the base of the abdomen, the apex of the latter being densely covered with black pubescence. Length ten to eleven lines.

Hab.—Mexico.

This insect I received from Dr. Sichel with the name ("*cyanea*, Sichel, n. s.") attached; not having been able to

ascertain whether the species has been described, I have adopted the name, believing it to be a manuscript one.

— 116. *Xylocopa micans.*

Xylocopa micans, St. Farg. Hym. ii. 208, ♂.
Xylocopa vidua, St. Farg. Hym. ii. 210, ♀.

This species is readily distinguished; the female is of a dark blue-black, the abdomen usually having a violet or purple tint; the pubescence is black, except a thin fringe on the thorax posteriorly of griseous pubescence; a tuft of white on each side of the basal segment of the abdomen, and another on each side of the apical segments; between these the fringe is black; the wings subhyaline, with their apex clouded. Length seven to eight lines.

The male is of a nigro-æneous colour, the abdomen partaking of vivid tints of violet and blue in certain lights; the labrum, clypeus, the face on each side, and the scape of the antennæ in front, yellowish-white. The pubescence on the thorax, basal segment of the abdomen, anterior tibiæ and tarsi, and the outside of the femora, rufo-fulvous; the intermediate tarsi are densely fringed with black pubescence, the first joint having a patch of white. The eyes large and approximating on the vertex. The abdomen testaceous beneath. Having had an opportunity of seeing the types of the sexes, I have united them as constituting one species.

Hab.—Carolina; East Florida.

— 117. *Xylocopa cubæcola.*

Xylocopa cubæcula, Lucas, La Sagra's Hist. Cuba, 776, pl. 19, fig. 8, ♀.
Xylocopa morio, Cresson (nec Fabr.), Hym. Cuba, 190, ♂, ♀.

The "*morio*" of Fabricius is undoubtedly one of the large species of the genus, the original description in the "Entomologia Systematica" gives "Magna, tota atra," and remarks on its close affinity to *X. latipes*. Cresson, I believe, is in error in referring this small species to the Fabrician one.

The male of *X. cubæcola* is fulvous, with the labrum, clypeus, and antennæ beneath, pale yellow; between the antennæ, on the vertex posteriorly, and on the thorax, the pubescence is fulvous; at the base of the abdomen it is

short and dense, and long and dense at its apex; the apical margins of the segments are obscurely fuscous. Length eight and a half lines.

Female entirely black, punctured, and shining; the disk of the thorax and the scutellum sparingly punctate; the flagellum of the antennæ, except the three basal joints, testaceous beneath; wings fusco-hyaline, darkest at their apex, and having a violet iridescence. Abdomen: the apical segments fringed laterally with black pubescence; at the extreme apex is a little ferruginous pubescence; this would probably be frequently obliterated. Length eleven lines.

Hab.—Cuba.

*118. *Xylocopa orpifex.*

Female.—Entirely black and closely punctured; the frontal tubercle obsolete; the labrum with a single tooth, and fringed with ferruginous hairs. The thorax pubescent, and having a small impunctate space on the disk; wings fusco-hyaline, with a darker cloud at their apical margins. Abdomen finely but not closely punctured. Length seven and a half lines.

Male.—Black, a spot on the mandibles and the face, as high as the insertion of the antennæ, pale yellow; the front of the thorax with ochraceous pubescence; on the thorax beneath the pubescence is paler. Abdomen finely and sparingly punctured; wings as in the other sex. Length seven and a half lines.

Hab.—California.

*119. *Xylocopa loripes.*

Male.—Blue-black, with violet and purple tints on the thorax and abdomen; the pubescence black; the clypeus, a space above it, the face at its sides, and also the abdomen beneath, yellow; the wings fusco-hyaline, with a slight violet iridescence; the anterior and intermediate tibiæ and tarsi with a long fringe of black pubescence behind; the posterior tibiæ curved, thickened, and deeply notched at their apex; the notch is a curved exterior excavation, and terminates in a short spine; the first joint of the tarsi is densely pubescent, and exteriorly forms a long floccus. The sides of the abdomen are thickly fringed with pubescence, forming a thick brush at the apex. The eyes very

large, and almost uniting on the vertex. Length ten lines.

Hab.—Mexico (Oajaca).

120. *Xylocopa lateralis.*

Xylocopa lateralis, Say, Bost. Journ. Nat. Hist. i. 413, ♂.

Obscurely violaceous; the head black, the labrum, clypeus, and front of the scape of the antennæ, white. The abdomen with a lateral fringe of cinereous pubescence which extends upwards on each side, becoming obsolete towards the base. Length about nine lines.

Hab.—Mexico.

121. *Xylocopa purpurea.*

Xylocopa purpurea, Cress. Hym. Texana, 284, ♀.

Black, with a purple reflection and with blue or green tints in certain lights; abdomen deep purple, the pubescence black; the head punctured, but sparingly so on the vertex; an oblique indentation at the summit of the eyes; wings smoky, their apex dark. Abdomen punctured, most closely so at the sides; the apex with black pubescence, and having a tuft of white on each side. Length about eight and a half lines.

Hab.—Texas.

*122. *Xylocopa tenuata.*

Female.—Dark blue, with shades of violet on the thorax and abdomen; the disk of the thorax impunctate, otherwise the thorax and head are closely punctured; the abdomen is more finely and distantly punctured; the three apical segments have a green tint and are closely and finely punctured; wings fusco-hyaline, with a slight violet iridescence. Length six and a half lines.

Hab.—Mexico.

*123. *Xylocopa formosa.*

Female.—Dark blue; on the vertex and on the disk of the mesothorax are shades of violet, as there are also on the legs and on the abdomen beneath; the anterior coxæ rufo-testaceous beneath. The head closely punctured,

a smooth line down the middle of the clypeus. The entire pubescence black, of which there is a tuft on each side of the face; wings brown, with a violet iridescence and a faint green tint at their apex; the thorax covered with short pubescence. Abdomen closely punctured, and thinly covered with short fine pubescence; the apical segments fringed laterally with long, loose, black hairs. Length eight lines.

Hab.—Mexico.

Note.—A * distinguishes the new species, the types of which are in the collection of the British Museum.

INDEX TO SPECIES.

acutipennis, 64
æneipennis, 85
æstuans, 54
affinis, 105
africana, 15
albiceps, 34
albifrons, 29
albo-fasciata, 42
Amedæi, 39
angolensis, 30
anthophoroides, 96
apicalis, 35
appendiculata, 52
artifex, 97
Augusti, 88
auripennis, 47
aurulenta, 87
barbata, 80
basalis, 49
bombiformis, 75
Brasilianorum, 81
bryorum, 59
caffra, 16
Cajennæ, 83
calens, 21
cantabrica, 4
capensis, 7
capitata, 7
carbonaria, 90
carinata, 33
carolina, 112
chrysoptera, 81
circumvolans, 53
cirtana, 38
cœrulea, 45
collaris, 46
colona, 89
combusta, 9
corniger, 83
cornuta, 83
coronata, 72
crassa, 19
cubæcola, 117
cupripennis, 22
cyanea, 115
cyanescens, 2
Dejeanii, 46
dimidiata, 59, 91
dissimilis, 43
diversipes, 69
divisa, 18
electa, 108
erratica, 107
fasciata, 3, 82
femorata, 1, 23
fenestrata, 44
fervens, 106
fimbriata, 83
flavilabris, 28
flavo-nigrescens, 63
flavo-rufa, 8
formosa, 123
frontalis, 82
fuscata, 3
gigas, 40
grisescens, 23, 86
grossa, 78
hellenica, 3
hottentotta, 13
ignita, 62
imitator, 36
inconstans, 31
indica, 44, 60
insularis, 73
iricolor, 78
lanata, 6
lateralis, 120
lateritia, 14
latipes, 40
Latreillii, 41
leucothorax, 54
loripes, 119
lucida, 98
lugubris, 37
lunata, 61
luteola, 17
macrops, 92
mesoxantha, 50
metallica, 103
micans, 116
minuta, 2
modesta, 10
mordax, 111
morio, 82, 84, 117

nigrita, 20
nigro-cincta, 109
nigro-cœrulea, 70
nitens, 84
nobilis, 71
oblonga, 11
obscurata, 25
olivacea, 17
Olivieri, 3
ordinaria, 104
ornata, 99
orpifex, 118
perforator, 51
perversa, 50
phalothorax, 66
Philippinensis, 74
pictifrons, 58
pictipennis, 65
præusta, 24
producta, 27
provida, 57
pulchra, 93
purpurea, 121
rotundiceps, 100
rufescens, 48
rufipes, 76
rufitarsis, 12
similis, 101
simillima, 77
sinuatifrons, 4
sonorina, 67
splendidula, 94
tabaniformis, 114
tarsata, 32
taurica, 2
tenuata, 122
tenuiscapa, 41
teredo, 81
texana, 113
torrida, 19
trepida, 8
unicolor, 56
ustulata, 26
valga, 5
varians, 102
varipes, 15
verticalis, 54, 55
vidua, 116
violacea, 1
virescens, 95
virginica, 112
viridigastra, 110
viridis, 79
viridipennis, 41
volatilis, 68